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Should mosses have common names?
Part 8. The Common Names of Bryales

Janice M. Glime[1]

The large order Bryales has many species that are difficult to distinguish and that therefore have no common names. However, when I added my translation of the Swedish names, they provided a rich variety of often very descriptive and memorable common names. These frequently reflect their European habitats, but some are descriptive of striking characters, such as "black knob moss" for the black capsule of *Catoscopium nigritum*, "swan moss" for the long, graceful setae of *Amblyodon* and *Meesia*, "pipe-cleaner moss" for *Paludella squarrosa*, and numerous descriptive names that are translations of the scientific names.

Some of the poetic names come from Japan and China, such as the Japanese "paper lantern moss" (nagami-chouchin-goke) for *Aulacomnium heterostichum* or the Chinese "northern lantern moss" for *Cinclidium*. However, the most risque name is "flapper moss" (based on the red teeth) for *Mnium spinulosum*, provided by Crum (1976) from an unknown source.

Some names provide a similar set of interpretations between authors, such as apple, bead, or ball for *Bartramia ithyphylla*, whereas apple and pear for *Bartramia pomiformis* reflect looking at them at different times in their development.

Some mosses have a single distinctive feature that results in the same name being applied in many sources and countries, such as "silvery bryum," "silver moss," "silvery thread moss," "silver thread moss," and "silver bryum" for *Bryum argenteum*, with the only different name I have found being the Chinese name of "common true moss." Everyone agrees that *Bryum pallescens* is pale. For *Leptobryum pyriforme*, authors are divided between naming it for the pear-shaped capsule and the thread-like leaves. Uses of mosses in the order Bryales are few. Use of *Pohlia nutans* setae for bird nests results in a lining that resembles threads of gold (Crum 1976). In China, species of *Plagiomnium* are the winter host of the aphid that is so important for making the Chinese gall nut, a food delicacy.

Conventions in formatting follow Glime (1989). The **meaning** of the scientific name, as supplied by Elizabeth Dunham, is provided immediately after the scientific name. Any structure to which the name applies is in parentheses. Nomenclature follows Anderson, *et al.* (1990).

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Aulacomniaceae

Aulacomnium: furrowed moss (capsule)[9]; bog mosses[6]; nagami-chouchinn-goke = paper lantern moss[13]; crease capsule moss[14]; groove moss[25]

Aulacomnium androgynum (Hedw.) Schwaegr.: lover's moss[5]; bud-headed thread moss[7, 11]; narrow-leaved thread moss[8]; tama-himo-goke = string moss[13]; bud-headed thread-moss[20]; little groove moss[25]

Aulacomnium heterostichum (Hedw.) B.S.G.: nagami-chouchin-goke = paper lantern moss[13]; differential branched crease capsule moss[14]

Aulacomnium palustre (Hedw.) Schwaegr.: Gymnocybe[1]; ribbed bog moss[5, 6, 16]; bog thread moss[7]; marsh thread moss[8, 11]; oh-himogoke = large string moss[13]; wetland crease capsule moss[14]; groove moss[25]

Aulacomnium turgidum (Wahlenb.) Schwaegr.: swollen thread moss[11]; big crease capsule moss[14]; mountain groove moss[25]

Bartramiaceae

Bartramia: for E. B. Bartram of America[9]; apple mosses[2]; apple moss[8, 25]; tamagoke = ball moss[13]; bead moss[14]; apple-moss[17]

Bartramia halleriana Hedw.: Hallerian apple moss[8]; Haller's apple moss[11]; large apple moss[25]

Bartramia ithyphylla Brid.: long-leaved bartramia' apple moss[1]; straight-leaved apple moss[8, 11]; Korai-tama-goke = Korean ball moss[13]; straight leaf bead moss[14]; stiff apple moss[25]

Bartramia pomiformis Hedw.: long-leaved apple moss[2]; apple moss[3, 5, 6, 7, 11]; apple-moss[4]; common apple moss[8]; oh-tamagoke = large ball moss[13]; pear-capsule bead moss[14]; common apple-moss[20]; cushion apple moss[25]

Bartramia stricta Brid.: rigid apple moss[11]

Bartramia subulata Bruch & Schimp. in B.S.G.: green bead moss[14]

Bartramidula: small-bead moss[14]

Bartramidula wilsonii Bruch & Schimp. in B.S.G.: bell moss[13]

Conostomum tetragonum (Hedw.) Lindb.: northern conostomum[8]; cone-fringe moss[11]; helmet moss[25]

Philonotis: loving moisture[9]; swamp moss[13, 14]; river moss[25]

Philonotis fontana (Hedw.) Brid.: aquatic apple moss[2]; fountain creek moss[5]; fountain apple moss[7, 8, 11]; swamp moss[13]; common swamp moss[14]; fountain apple-moss[20]; river moss[25]

Philonotis fontana var. *caespitosa* (Jur.) Schimp.: tufted apple moss[11]; fallow river moss[25]

Philonotis fontana var. *pumila* (Turn.) Brid.: north river moss[25]

Philonotis marchica (Hedw.) Brid.: south river moss[25]

Philonotis muhlenbergii (Schwaegr.) Brid.: aquatic apple moss[16]

Philonotis yezoana Besch. & Card. in Card.: Hokkaido swamp moss[13]

Plagiopus: level-pearl moss[14]

Plagiopus oederiana (Sw.) Crum & Anderson: oblique stalk[9]; short-leaved bartramia[1]; short-leaved apple moss[2]; slender apple moss[8]; Oeder's apple moss[11]; Oeder's apple-moss[20]; chalk apple moss[25]

Bryaceae

Anomobryum: gingoke-modoki = false silver moss[13]; silver moss[14]

Anomobryum filiforme (Dicks.) Solms in Rabenh.: common silver moss[14]

Brachymenium: uri-goke = melon moss[13]; short-membrane moss[14]

Bryum: true moss[14]; bryum moss[25]

Bryum algovicum Sendtn. ex C. Müll.: drooping bryum[25]

Bryum alpinum With.: alpine true moss[14]; copper bryum[25]

Bryum arcticum (R. Br.) Bruch & Schimp. in B.S.G.: Arctic true moss[14]; red bryum[25]

Bryum argenteum Hedw.: silvery bryum[1, 2, 4, 6, 9, 10, 17]; silver moss[3, 13]; silvery thread moss[7, 8]; silver thread moss[11]; common true moss[14]; silvery thread-moss[20]; silver bryum[25]

Bryum blindii Bruch & Schimp. in B.S.G.: swelling bog thread moss[8]; lowland bog thread moss[11]; cherry bryum[25]

Bryum bornholmense Wink. & Ruthe: potato bryum[25]

Bryum calophyllum R. Br.: matted bryum[2]; common bryum[6]; lesser matted thread moss[8, 11]; narrow wire moss[13]; blunt bryum[25]

Bryum canariense Brid.: long-stalked thread moss[11]

Bryum capillare Hedw.: twisting thread moss[11]; fine-leaf true moss[14]; screw bryum[25]

Bryum curvatum Kaur. & Arnell: cyclic-leafed moss[13]; seashore bryum[25]

Bryum dichotomum Hedw.: Barnes' thread moss[11]; two-color true moss[14]; grain bryum[25]

Bryum flaccidum Brid.: fallow bryum[25]

Bryum klinggraeffii Schimp. in Klinggr.: all-seasons thread moss[11]; thread-moss[20]; raspberry bryum[25]

Bryum knowltonii Barnes: bog true moss[14]; lake bryum[25]

Bryum lisae De Not. var. *cuspidatum* (Bruch & Schimp. in B.S.G.) Marg.: small-mouthed thread moss[11]; small-mouthed thread-moss[20]; intermediate bryum[25]

Bryum longisetum Bland. ex Schwaegr.: long-seta true moss[14]; long-shafted bryum[25]

Bryum marratii Hook. f. & Wils. ex Wils.: Baltic bryum[25]

Bryum meesioides Kindb. in Mac.: Marratt's thread moss[11]

Bryum muehlenbeckii Bruch & Schimp. in B.S.G.: mowed bryum[25]

Bryum nitidulum Lindb.: large-leaved thread moss[11]; lustrous bryum[25]

Bryum oblongum Lindb.: dwarf bryum[25]

Bryum pallens (Brid.) Sw. in Röhl.: notch bryum[25]

Bryum pallescens Schleich. ex Schwaegr.: pale-leaved thread moss[11]; yellow true moss[14]; pale-leaved thread-moss[20]; pale bryum[25]

Bryum pseudotriquetrum (Hedw.) Gaertn. et al.: tall clustered thread moss[11]; three-leaf-like true moss[14]; marsh bryum[25]

Bryum purpurascens (R. Br.) Bruch & Schimp. in B.S.G.: red-stemmed bryum[6]; bog thread moss[8]; alpine-bog thread moss[11]; large wire moss[13]; purple true moss[14]; purple bryum[25]

Bryum reedii Robins.: wall thread moss[11]

Bryum rubens Mitt.: arable land tuber bryum[25]

Bryum ruderale Crundw. & Nyh.: pea bryum[25]

Bryum salinum Hag. ex Limpr.: salt bryum[25]

Bryum schleicheri Schwaegr.: large leaf bryum[25]

Bryum stirtonii Schimp.: beard bryum[25]

Bryum subapiculatum Hampe: rose tuber bryum[25]

Bryum subneodamense Kindb.: spoon bryum[25]

Bryum tenuisetum Limpr.: yellow tuber bryum[25]

Bryum turbinatum (Hedw.) Turn.: turbinate thread moss[8]; pear-fruited thread moss[11]; ball-capsule true moss[14]; neck bryum[25]

Bryum uliginosum (Brid.) Bruch & Schimp. in B.S.G.: bog thread moss[11]; hanging capsule true moss[14]; inclined bryum[25]

Bryum violaceum Crundw. & Nyh.: pill bryum[25]

Bryum warneum (Röhl.) Bland. ex Brid.: Warne's thread moss[11]; sea bryum[25]

Bryum weigelii Spreng.in Biehler: Duval's thread moss[11]; ribbon bryum[25]

Bryum wrightii Sull. & Lesq.: Wright's true moss[14]

Epipterygium Lindb.: minute diaphanous thread moss[8]; red striped moss (costa)[13]; purple small-leafed moss[14]

Leptobryum: slender bryum[9]; thin-capsule moss[14]

Leptobryum pyriforme (Hedw.) Wils.: long-necked bryum[1, 6]; pear-shaped thread moss[2]; pear-shaped thread-moss[4]; slender pear-fruited thread moss[7]; golden thread moss[8, 11]; common thin-capsule moss[14]; pear moss[25]

Mielichhoferia: narrow-leafed moss[13]; toothless moss[14]; pyrite moss[25]

Mielichhoferia mielichhoferiana (Funck) Loeske: narrow-leafed moss[13]; copper moss[21]

Orthodontium gracile (Wils. in Sm.) Schwaegr. ex B.S.G.: slender thread moss[11]

Plagiobryum: level-capsule moss[14]; hump moss[25]

Plagiobryum demissum (Hook.) Lindb.: club-fruited thread moss[11]; gourd bryum[13]; dreaded hump moss[25]

Plagiobryum zierii (Hedw.) Lindb.: Zierian thread moss[8, 11]; long neck moss[13]; common level-capsule moss[14]; white hump moss[25]

Pohlia: for J. B. Pohl of Germany[9]; sponge gourd moss[13]; towel-gourd moss[14]; nodding moss[25]

Pohlia andalusica (Hohn.) Broth.: clustered grain nodding moss[25]

Pohlia andrewsii Shaw: tundra nodding moss[25]

Pohlia annotina (Hedw.) Lindb.: pale-fruited thread moss[11]; pale-fruited thread-moss[20]; spiny grain nodding moss[25]

Pohlia atropurpurea (Wahlenb.in Fürnr.) H. Lindb.: Lapp nodding moss[25]

Pohlia bulbifera (Warnst.) Warnst.: blunt grain nodding moss[25]

Pohlia camptotrachela (Ren. & Card.) Broth.: small grain nodding moss[25]

Pohlia cruda (Hedw.) Lindb.: alpine glaucous thread moss[8]; alpine thread moss[11]; shiny sponge gourd moss[13]; everywhere towel-gourd moss[14]; opal nodding moss[25]

Pohlia crudoides (Sull. & Lesq.) Broth.: pipe nodding moss[25]

Pohlia drummondii (C. Müll.) Andrews: snow nodding moss[25]

Pohlia elongata Hedw.: long-necked thread moss[8]; long-fruited thread moss[11]; common towel-gourd moss[14]; swan nodding moss[25]

Pohlia erecta Lindb.: upright nodding moss[25]

Pohlia filum (Schimp.) Mårt.: slender thread moss[8]; large grain nodding moss[25]

Pohlia lescuriana (Sull.) Grout: spherical bulb nodding moss[25]

Pohlia longicolla (Hedw.) Lindb.: pond moss[13]; long neck nodding moss[25]

Pohlia ludwigii (Spreng. ex Schwaegr.) Broth.: Ludwig's thread moss[8, 11]; mountain brook nodding moss[25]

Pohlia melanodon (Brid.) Shaw: good-looking nodding moss[25]

Pohlia nutans (Hedw.) Lindb.: nodding pohlia[2, 5, 6]; silky pendulous thread moss[7, 8]; pendulous thread moss[11]; sponge gourd moss[13]; yellow towel-gourd moss[14]; silky pendulous thread-moss[20]; copper-wire moss[21]; common nodding moss[25]

Pohlia obtusifolia (Brid.) L. Koch: blunt nodding moss[25]

Pohlia proligera (Kindb. ex Breidl.) Lindb. ex Arnell: thin seta sponge gourd moss[13]; egg-capsule towel-gourd moss[14]; cottony nodding moss[25]

Pohlia sphagnicola (Bruch & Schimp.) Lindb. & Arnell: large towel-gourd moss[14]; bog nodding moss[25]

Pohlia wahlenbergii (Web. & Mohr) Andrews: pale-leaved thread moss[8]; Wahlenberg's thread moss[11]; paper lantern pohlia[13]; yellow-toothed nodding moss[25]

Rhodobryum: rose bryum[9]; umbrella moss[13]; large-leaf moss[14]; rose moss[25]

Rhodobryum ontariense (Kindb.) Par. in Kindb.: giant bryum[1]; false umbrella moss[13]; chalk rose moss[25]

Rhodobryum roseum (Hedw.) Limpr.: giant bryum[1, 2, 6]; rose moss[3, 10, 25]; rose bryum[4]; rosaceous thyme thread moss[8]; rosette thread moss[11]; umbrella moss[13]; common large-leaf moss[14]

Roellia roellii (Broth. in Röll.) Andrews ex Crum: Sandberg's bryum[5]

Catoscopiaceae

Catoscopium: hanging capsule moss[14]

Catoscopium nigritum (Hedw.) Brid.: black-fruited weissia[8]; golf club moss[10]; down-looking moss[11]; common hanging capsule[14]; black knob moss[25]

Meesiaceae

Amblyodon dealbatus (Hedw.) Bruch & Schimp. in B.S.G.: pale-leaved thread moss[8]; pale thread moss[11]; longneck moss[25]

Meesia: cold moss[14]; swan moss[25]

Meesia longiseta Hedw.: long-stalked thread moss[8]; long-shafted swan moss[25]

Meesia triquetra (Richt.) Ångstr.: long-stalked thread moss[8]; three-leafed cold moss[14]; triangular swan moss[25]

Meesia uliginosa Hedw.: capillary thread moss[8]; dwarf meesia[11]; obtuse-leaf cold moss[14]; swan moss[25]

Paludella Brid.: cold wetland moss[14]

Paludella squarrosa (Hedw.) Brid.: squarrose thread moss[8]; drooping-leaved thread moss[11]; common cold-wetland moss[14]; pipe-cleaner moss[25]

Mniaceae

Cinclidium: northern-lantern moss[14]; pointed moss[25]

Cinclidium arcticum Bruch & Schimp. in B.S.G.: Arctic northern-lantern moss[14]; mountain pointed moss[25]

Cinclidium stygium Sw. in Schrad.: sooty cupola moss[11]; common northern-lantern moss[14]; bog pointed moss[25]

Cinclidium subrotundum Lindb.: blunt pointed moss[25]

Cyrtomnium: curved-lantern moss[14]; troll moss[25]

Cyrtomnium hymenophylloides (Hüb.) Nyh. ex T. Kop.: flat troll moss[25]

Cyrtomnium hymenophyllum (Bruch & Schimp. in B.S.G.) Holm.: fern-leafed curved-lantern moss[14]; round troll moss[25]

Leucolepis acanthoneuron (Schwaegr.) Lindb.: Menzie's tree moss

Mnium: star moss[25]

Mnium ambiguum H. Müll.: north star moss[25]

Mnium hornum Hedw.: long-leaved mnium[1]; forest-star moss[3]; swan's neck thread moss[7]; swan's-neck thyme thread moss[8]; swan-neck thread moss[11]; larch mountain paper lantern moss[13]; swan-neck thyme thread-moss[20]; shade star moss[25]

Mnium marginatum (With.) Brid. ex P. Beauv.: thick-edged thyme thread moss[8]; serrated thyme thread moss[11]; edged lantern moss[14]; pointed star moss[25]

Mnium spinosum (Voit) Schwaegr.: spiny thyme thread moss[11]; spine lantern moss[14]; spiny star moss[25]

Mnium spinulosum Bruch & Schimp. in B.S.G.: red-mouthed mnium[1, 5]; flapper moss, red-mouthed mnium[10]

Mnium thomsonii Schimp.: inclined-leaf lantern moss[14]; mountain star moss[25]

Plagiomnium: many-stalked thyme thread moss[8]; many-fruited thread moss[11]; vine paper lantern moss[13]; spreading-lantern moss[14]; magnificent moss[2]

Plagiomnium ciliare (C. Müll.) T. Kop.: toothed mnium[1]

Plagiomnium cuspidatum (Hedw.) T. Kop.: woodsy mnium[1, 6, 10]; pointed mnium[2, 4]; star moss[3]; pointed-leaved thyme thread moss[8]; pointed thyme thread moss[11]; urn moss[13]; point-leaf spreading-lantern moss[14]; grove magnificent moss[25]

Plagiomnium drummondii (Bruch & Schimp.) T. Kop.: Drummond's mnium[1]; long-teeth spreading-lantern moss[14]

Plagiomnium ellipticum (Brid.) T. Kop.: marsh magnificent moss[25]

Plagiomnium insigne (Mitt.) T. Kop.: badge mnium[5]

Plagiomnium medium (Bruch & Schimp. in B.S.G.) T. Kop.: long-point spreading-lantern moss[14]; bow magnificent moss[25]

Plagiomnium rostratum (Schrad.) T. Kop.: long-beaked thread moss[7]; long-beaked thyme thread moss[8]; obtuse-leaf spreading=lantern moss[14]; chalk magnificent moss[25]

Pseudobryum: Bryum-like moss[14]

Pseudobryum cinclidioides (Hüb.) T. Kop.: northern Bryum-like moss[14]; river magnificent moss[25]

Rhizomnium: Japanese fan moss[13]; hairy-lantern moss[14]; round moss[25]

Rhizomnium andrewsianum (Steere) T. Kop.: polar round moss[25]

Rhizomnium magnifolium (Horik.) T. Kop.: large-leaved mnium[1]; large-leafed mnium[2]; large-leaf hairy-lantern moss[14]; large round moss[25]

Rhizomnium pseudopunctatum (Bruch & Schimp.) T. Kop.: felt round moss[25]

Rhizomnium punctatum (Hedw.) T. Kop.: early mnium[1, 5, 6]; dotted mnium[4]; dotted thread moss[7]; dotted thyme thread moss[8]; dotted-leaved thyme thread moss[11]; common hairy-lantern moss[14]; dotted thyme thread-moss[20]; brook round moss[25]

Trachycystis: papillose-lantern moss[14]

Trachycystis flagellaris (Sull. & Lesq.) Lindb.: whip-branch papillose-lantern moss[14]

Racopilaceae

Racopilum P. Beauv.: selaginella moss[14]

Racopilum tomentosum (Hedw.) Brid.: common selaginella moss[14]

Rhizogoniaceae

Pyrrhobryum spiniforme (Hedw.) Mitt.: spiny brush moss[12]; spine juniper moss[14]

Rhizogonium: Japanese cypress moss[13]; juniper moss[14]

Timmiaceae

Timmia: for H. R. Timm of Germany[9]; small herbaceous cryptomeria[13]; beautiful-posture moss[14]; timmia[25]

Timmia austriaca Hedw.: Indian brave moss[3]; sheath-leaved timmia[11]; southern beautiful-posture moss[14]; forest timmia[25]

Timmia megapolitana Hedw.: Mecklenburg timmia[8]; common beautiful-posture moss[14]

Timmia siberica Lindb. & Arnell: Siberian beautiful-posture moss[14]

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[1] Grout, A. J. 1900. *Mosses with a hand-lens.* Press of Binghampton Republican, New York, 74 Pp.; Grout, A. J. 1903. *Mosses with a handlens and microscope.* By Author. N. Y.

[2] Bland, J. 1971. *Forests of Lilliput*. Prentice-Hall, Inc., Englewood Cliffs. 210 Pp.

[3] Shuttleworth, F. S. and H. S. Zim. 1967. *Non-flowering plants. Ferns, mosses, lichens, mushrooms and other fungi*. A Golden Nature Guide, Golden Press, N.Y. 160 Pp.

[4] Marshall, N. L. 1907. *Mosses and lichens*. Doubleday, Page, & Co., N. Y. 327 Pp.

[5] Harthill, M. P. and I. O'Connor. 1975. *Common mosses of the Pacific coast*. Naturegraph.

[6] Welch, W. H. 1957. *Mosses of Indiana. An illustrated manual*. The Bookwalter Company, Indianapolis. 478 Pp.

[7] Jewell, A. L. 1955. *The observer's book of mosses and liverworts*. F. Warne and Co. Ltd., N.Y.

[8] Stark, R. M. 1860. *A popular history of British mosses, 2nd edition*. Routledge, Warne, & Routledge, London (Wheldon & Wesley), 348 Pp.

[9] Dunham, E. M. 1951. *How to know the mosses*. The Mosher Press, Boston.

[10] Crum, H. 1976. *Mosses of the Great Lakes forest, revised edition*. Univ. Mich. 10: 1-404.

[11] Tripp, F. E. 1888. *British mosses, their homes, aspects, structure and uses*. George Bell & Sons, Covent Garden, London (Wheldon & Wesley), 2 Vol.

[12] Johnson, A. 1980. *Mosses of Singapore and Malaysia*. Singapore University Press, Singapore, 126 Pp.

[13] Dr. Zen Iwatsuki (personal communication)

[14] Jinkun Zhang (personal communication, translated from Wu *et al.* 1984)

[16] Thomas, L. P. & J. R. Jackson. 1985. *Walk softly upon the earth. A pictorial guide to Missouri mosses, liverworts and lichens.* Missouri Dept. Conservation, Jefferson City, 129 pp.

[17] Britton, E. G. 1900. Mosses. Nature Study Leaflets, Natural Science Committee of the Associate Alumnae of the Normal College, New York City 4: 1-9.

[20] Russell, T. H. 1910. *Mosses and liverworts. An introduction to their study, with hints as to their collection and preservation*. Sampson Low, Marston & Co., LD. 211 Pp., 10 plates.

[21] Vitt, D. H., J. E. Marsh, and R. B. Bovey. 1988. *Mosses, lichens & ferns of northwest North America*. Lone Pine Publishing, Edmonton, Alberta, Can. 296 Pp.

[25] Hallinbäck, T. and L. Söderström. 1987. Sveriges mossor och deras svenska namm -- en kommenterad checklista. [The bryophytes of Sweden, an annotated checklist with common names.] Svensk Bot. Tidskr. 81: 357-388.

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Literature Cited

Anderson, L. E., Crum, H. A. and Buck, W. R. 1990. List of the mosses of North America North of Mexico. Bryologist 93: 448-499.

Crum, H. A. 1976. *Mosses of the Great Lakes forest, revised edition*. Univ. Mich. 10: 1-404.

Glime, J. M. 1989. Should mosses have common names? Evansia 6(1):1-6.

Wu, P.-C., Lou J.-s & Wang M.-z. 1984. *A Glossary of Terms and Names of Bryophytes*. 124 pp. Beijing.

The bryophytes and lichens collected during the 16th A. L. Andrews Foray in Northwestern Connecticut

Nancy Slack[1], Benito C. Tan & Elisabeth Lay[2]

The 16th A. L. Andrews Foray was organized by Drs. Antoni Damman and Loretta Johnson of the University of Connecticut and held from September 20 to 22, 1992, at Canaan and Norfolk areas of Litchfield County at the northwestern corner of Connecticut. Dr. Nancy Slack assisted in the site selection. The localities visited were Point of Rocks, Robbins Swamp, Holleran Swamp, Beckley Bog, Twin Lakes, Mohawk Mountain Black Spruce Bog, Tobey Bog, Crissey Pond, and Housatonic Great Falls, which include a variety of habitats, such as limestone ledge, wet schistose marble cliff, Quercus scrub vegetation, Larch swamp, fen and bog.

For the bryophyte flora of Connecticut, the last comprehensive account seems to be the work of Evans and Nichols published in 1908, although additional information can be found in the two volumes of Crum and Anderson (1981). The lichen flora is similarly little studied. The two important reports are Evans and Meyrowitz (1926) and Hale (1950) on the lichen flora of Connecticut. In addition, Evans (1930, 1944, 1950) collected *Cladonia* extensively in the state.

Since the bryophyte and lichen floras of Connecticut are relatively little known in the New England region, a species list is compiled here. The bryophyte list is based primarily on the collections made and determined by Richard Andrus, Michael Corey, Lorinda Leonardi, Norton Miller, Nancy Slack, Benito Tan, Norman Trigoboff and William Town. The lichens list is based on the collections made and determined by Elisabeth Lay, Sherry Pittam, Elizabeth Kneiper and Ron Robare. Names of *Sphagnum* specimens were verified by R. Andrus and the *Cladonia* collections were determined by S. Hammer at the Farlow Herbarium. The nomenclature of mosses follows that of Anderson, Crum and Buck (1990), except for *Sphagnum* which follows Anderson (1990). For hepatics, the nomenclature follows Stotler and Crandall-Stotler (1977), and for lichens, Egan (1987, 1991).

As is, 6 species of mosses are confirmed as new to the state of Connecticut, namely *Homalia gracilis*, *Limprichtia cossonii*, *Rhizomnium appalachianum*, *Sphagnum bartlettianum*, *S. henryense* and *S. isoviitae*. *Hypocenomyce scalaris* is a new lichen record for the state. Surprisingly, a few reportedly widespread northern species such as *Scorpidium scorpioides* and *Anomodon rugelii*, in spite of our search for literature, do not seem to have a definitive, published Connecticut record.

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One noteworthy collection is *Calliergon trifarium*, an uncommon species of highly calcareous fen. It was collected on this foray from Twin Lakes by Bruce Gilman. The species has one previous herbarium record collected by G. E. Nichols from the same place 60 years ago (MO!, FH!). As far as we know, Twin Lakes remains the only known locality for this species in Connecticut. It has not been found in New York in spite of intensive search.

The exceedingly slender and freely branching *Homalia gracilis*, a calciphile, is another interesting find. It grows abundantly on the shaded side of limestone coutcrops. The species has been placed in *Neckera* or as a variety/form of *Homalia trichomanoides*. Considering its habitat preference and distinct morphology, we think that it perhaps deserves full species recognition apart from *H. trichomanoides*.

List of bryophytes collected -

- *Abietinella abietina* (Hedw.) Fleisch.
- *Amblystegium serpens* (Hedw.) Schimp.
  - var. *juratzkanum* (Schimp.) Rau & Herv.
  - *varium* (Hedw.) Lindb.
- *Amphidium mougeotii* (BSG) Schimp.
- *Aneura pinguis* (L.) Dum.
- *Anomodon attenuatus* (Hedw.) Hueb.
  - *rostratus* (Hedw.) Schimp.
  - *rugelii* (C. Muell.) Keissl.
  - *viticulosus* (Hedw.) Hook. & Tayl.
- *Aulacomnium heterostichum* (Hedw.) BSG
  - *palustre* (Hedw.) Schwaegr.
- *Barbula unguiculata* Hedw.
- *Bazzania trilobata* (L.) S. Gray
- *Brachythecium acuminatum* (Hedw.) Aust.
  - *digastrum* C. Muell. & Kindb.
  - *oedipodium* (Mitt.) Jaeg.
  - *oxycladon* (Brid.) Jaeg.
  - *rivulare* Schimp. in BSG
- *Brotherella recurvans* (Michx.) Fleisch.
- *Bryhnia graminicolor* (Brid.) Grout
  - *novae-angliae* (Sull. & Lesq.) Grout
- *Bryoandersonia illecebra* (Hedw.) Robins.
- *Calliergon giganteum* (Schimp.) Kindb.
  - *trifarium* (Web. & Mohr) Kindb.
- *Calliergonella cuspidata* (Hedw.) Loeske
- *Calypogeia ? muelleriana* (Schiffn.) K. Muell.
  - *sphagnicola* (Arn. & Pers.) Warnst. & Loeske
- *Campylium chrysophyllum* (Brid.) J. Lange
  - *polygamum* (Schimp.) C. Jens.
  - *stellatum* (Hedw.) C. Jens.
- *Cephalozia connivens* (Dicks.) Lindb.
  - *pleniceps* (Aust.) Lindb.
  - *macrostachya* Kaal.
- *Cephaloziella elachista* (Jack) Schiffn.
- *Cladopodiella fluitans* (Nees) Joerg.
- *Ctenidium molluscum* (Hedw.) Mitt.
- *Cyrto-hypnum minutulum* (Hedw.) Buck & Crum
- *Dicranum flagellare* Hedw.
  - *fulvum* Hook.
  - *fuscescens* Turn.
  - *montanum* Hedw.
  - *polysetum* Sw.
  - *scoparium* Hedw.
- *Diphyscium foliosum* (Hedw.) Mohr
- *Drepanocladus aduncus*
  - var. *polycarpus* (Voit) Roth
- *Encalypta procera* Bruch
- *Entodon cladorrhizans* (Hedw.) C. Muell.
- *Eurhynchium pulchellum* (Hedw.) Jenn.
- *Fissidens adianthoides* Hedw.
  - *bushii* (Card. & Ther.) Card. & Ther.
  - *dubius* P. Beauv.
- *Forsstroemia trichomitria* (Hedw.) Lindb.
- *Funaria hygrometrica* Hedw.
- *Frullania asagrayana* Mont.
  - *brittoniae* Evans
  - *eboracensis* Gott.
  - *riparia* Hampe ex Lindb.
- *Gymnostomum aeruginosum* Sm.
- *Haplohymenium triste* (Ces. in De Not.) Kindb.
- *Hedwigia ciliata* (Hedw.) P. Beauv.
- *Herzogiella turfacea* (Lindb.) Iwats.
- *Homalia gracilis* James ex Peck
  - (=*Homalia trichomanoides* fo. *gracilis* (James *ex* Peck) Crum)
- *Hygroamblystegium tenax* (Hedw.) Jenn.
- *Hypnum lindbergii* Mitt.
  - *pallescens* (Hedw.) P. Beauv.
- *Kurzia setacea* (Web.) Grolle
  - *sylvatica* (Evans) Grolle
- *Leptodictyum riparium* (Hdwe.) Warnst.
- *Leskea polycarpa* Hedw.
- *Limprichtia cossonii* (Schimp.) Anderson, Crum & Buck
  - *revolvens* (Sw.) Loeske
- *Lophocolea heterophylla* (Schrad.) Dum.
- *Marsupella emarginata* (Ehrh.) Dum.
- *Mnium thomsonii* Schimp.
- *Mylia anomala* (Hook.) S. Gray
- *Nowellia curvifolia* (Dicks.) Mitt.
- *Odontoschisma denudatum* (Nees ex Mart.) Dum.
- *Orthotrichum anomalum* Hedw.
- *Plagiomnium ciliare* (C. Muell.) T. Kop.
  - *cuspidatum* (Hedw.) T. Kop.
- *Plagiopus oederiana* (Sw.) Crum & Anderson
- *Platydictya confervoides* (Brid.) Crum
  - *jungermannioides* (Brid.) Crum
- *Platygyrium repens* (Brid.) Schimp. in BSG
- *Platyhypnidium riparioides* (Hedw.) Dix.
- *Pogonatum pensilvanicum* (Hedw.) P. Beauv.
- *Porella platyphylla* (L.) Lindb.
- *Preissia quadrata* (Scop.) Nees
- *Pseudobryum cinclidioides* (Hueb.) T. Kop.
- *Pylaisiella selwynii* (Kindb.) Crum, Steere & Anderson
- *Radula complanata* (L.) Dum.
- *Rhizomnium appalachianum* T. Kop.
  - *punctatum* (Hedw.) T. Kop.

- *Rhodobryum roseum* (Hedw.) Limpr.
- *Rhytidiadelphus squarrosus* (Hedw.) Warnst.
  - *triquetrus* (Hedw.) Warnst.
- *Riccardia latifrons* Lindb.
  - *multifida* (L.) S. Gray
- *Riccia fluitans* L.
- *Ricciocarpus natans* (L.) Corda
- *Schistidium apocarpum* (Hedw.) Bruch & Schimp.
- *Scorpidium scorpioides* (Hedw.) Limpr.
- *Sphagnum affine* Ren. & Card.
  - *andersonianum* Andrus
  - *angustifolium* (C. Jens.) C. Jens.
  - *bartlettianum* Warnst.
  - *capillifolium* (Ehrh.) Hedw.
  - *centrale* C. Jens. in Arnell & C. Jens.
  - *cuspidatum* Ehrh. ex Hoffm.
  - *fimbriatum* Wils.
  - *flexuosum* Dozy & Molk.
  - *fuscum* (Schimp.) Klinggr.
  - *girgensohnii* Russ.
  - *henryense* Warnst.
  - *isoviitae* Flatb.
  - *lescurii* Sull. in Gray
  - *magellanicum* Brid.
  - *palustre* L.
  - *papillosum* Lindb.
  - *riparium* Aongstr.
  - *rubellum* Wils.
  - *russowii* Warnst.
  - *squarrosum* Crome
  - *subsecundum* Nees in Sturm
  - *subtile* (Russ.) Warnst.
  - *teres* (Schimp.) Aongstr. in Hartm.
  - *warnstorfii* Russ.
  - *wulfianum* Girg.
- *Steerecleus serrulatus* (Hedw.) Robins.
- *Taxiphyllum deplanatum* (BSG) Fleisch.
- *Tetraphis pellucida* Hedw.
- *Thamnobryum alleghaniense* (C. Muell.) Nieuwl.
- *Thuidium delicatulum* (Hedw.) Schimp.
- *Tortella humilis* (Hedw.) Jenn.
  - *tortuosa* (Hedw.) Limpr.
- *Trichocolea tomentella* (Ehrh.) Dum.

List of lichens collected

- *Acaropsora fuscata* (Nyl.) Arnold
- *Anaptychia palmulata* (Michaux) Vainio
- *Aspicilia cinerea* (L.) Koerber
  - *elevata* (Lynge) Thomson
- *Bacidia inundata* (Fr.) Koerber
  - *schweinitzii* (Tuck.) A. Schneider
- *Biatora vernalis* (L.) Fr.
- *Bryoria furcellata* (Fr.) Brodo & D. Hawksw.
- *Buellia aethalea* (Ach.) Th. Fr.
- *Caloplaca citrina* (Hoffm.) Th. Fr.
  - *flavovirescens* (Wulfen) Dalla Torre & Sarnth.
- *Candelaria concolor* (Dickson) B. Stein
- *Candelariella efflorescens* R.C. Harris & Buck
- *Cetrelia olivetorum* (Nyl.) Culb. & C. Culb.
- *Cladina arbuscula* (Wallr.) Hale & Culb.
  - *rangiferina* (L.) Nyl.
  - *stellaris* (Opiz) Brodo
  - *submitis* (A. Evans) Hale & Culb.
- *Cladonia bacillaris* Nyl.
  - *cenotea* (Ach.) Schaerer
  - *chlorophaea* (Floerke ex Sommerf.) Sprengel
  - *crispata* (Ach.) Flotow.
  - *cristatella* Tuck.
  - *cylindrica* (A. Evans) A. Evans
  - *floerkeana* (Fr.) Floerke
  - *furcata* (Huds.) Schrader
  - *grayi* G. K. Merr. ex Sandst.
  - *incrassata* Floerke
  - *macilenta* Hoffm.
  - *ochrochlora* (Floerke)
  - *pleurota* (Floerke) Schaerer
  - *squamosa* (Scop.) Hoffm.
    - var. *subsquamosa* (Leighton) Vainio
  - *uncialis* (L.) Weber ex Wigg.
- *Collema fuscovirens* (With.) Laundon
  - *ryssoleum* (Tuck.) A. Schneider
  - *undulatum* Laurer ex Flotow
- *Dermatocarpon miniatum* (L.) Mann
- *Diploschistes scruposus* (Schreber) Norman
- *Evernia mesomorpha* Nyl.
- *Flavoparmelia caperata* (L.) Hale
- *Flavopunctelia soredica* (Nyl.) Hale
- *Graphis scripta* (L.) Ach.
- *Hypocenomyce scalaris* (Ach. ex Liljeblad) M. Choisy
- *Hypogymnia physodes* (L.) Nyl.
- *Hypotrachyna pustulifera* (Hale) Skorepa
- *Imshaugia aleurites* (Ach.) S.F. Meyer
- *Lasallia papulosa* (Ach.) Llano
- *Lecanora caesiorubella* Ach.
  - *dispersa* (Pers.) Sommerf.
  - *symmicta* (Ach.) Ach.
- *Lepraria finkii* (B. de Lesd. in Hue) R.C. Harris
- *Leptogium cyanescens* (Rabenh.) Koerber
  - *lichenoides* (L.) Zahlbr.
- *Lobaria pulmonaria* (L.) Hoffm.
  - *quercizans* Michaux
- *Melanelia halei* (Ahti) Essl.
  - *subaurifera* (Nyl.) Essl.
- *Parmelia fraudans* (Nyl.) Nyl.
  - *saxatilis* (L.) Ach.
  - *sulcata* Taylor
- *Parmeliopsis ambigua* (Wulfen in Jacq.) Nyl.
- *Peltigera canina* (L.) Willd.
  - *polydactyla* (Necker) Hoffm.
  - *praetextata* (Floerke ex Sommerf.) Zopf
- *Pertusaria hypothmnolica* Dibben
  - *pustulata* (Ach.) Duby
  - *trachythallina* Erichsen
- *Phaeophyscia adiastola* (Essl.) Essl.
  - *orbicularis* (Necker) Moberg
  - *pusilloides* (Zahlbr.) Essl.
  - *rubropulchra* (Degel.) Moberg
  - *sciastra* (Ach.) Moberg
- *Physcia aipolia* (Ehrh. ex Humb.) Fuernr.
  - *dubia* (Hoffm.) Lettau
  - *millergrana* Degel.
  - *stellaris* (L.) Nyl.
- *Porpidia albocaerulescens* (Wulfen) Hertel & Knoph
- *Protoblastenia rupestris* (Scop.) Steiner
- *Pseudoevernia consocians* (Vainio) Hale & Culb.
- *Punctelia rudecta* (Ach.) Krog
  - *subrudecta* (Nyl.) Krog
- *Rhizocarpon grande* (Florke ex Flotow) Arnold
  - *hochstetteri* (Koerber) Vainio
  - *obscuratum* (Ach.) Massal.
- *Rhizoplaca chrysoleuca* (Sm.) Zopf.
- *Rinodina subminuta* Magnusson
- *Stereocaulon intermedium* (Savicz) Magnusson
  - *paschale* (L.) Hoffm.
  - *subcoralloides* (Nyl.) Nyl.
- *Trapelia involuta* (Taylor) Hertel
- *Tuckermannopsis ciliaris* (Ach.) Gyelnik
  - *oakesiana* (Tuck.) Hale
  - *orbata* (Nyl.) Lai
  - *pinastri* (Scop.) Hale
  - *sepincola* (Erhr.) Hale
- *Umbilicaria muehlenbergii* (Ach.) Tuck.
- *Usnea hirta* (L.) Weber ex Wigg.
- *Usnea strigosa* (Ach.) A. Eaton
- *Xanthoparmelia conspera* (Erhr. ex Ach.) Hale
- *Xanthoria fallax* (Hepp in Arnold) Arnold

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References

Anderson, L. E. 1990. A checklist of *Sphagnum* in North America north of Mexico. Bryologist 93: 500-501.

_____________, H. A. Crum & W. R. Buck. 1990. List of the mosses of North America north of Mexico. Bryologist 93: 448-499.

Crum, H. A. & L. E. Anderson. 1981. Mosses of Eastern North America. vols. 1 & 2. Columbia University Press.

Egan, R. S. 1987. A fifth checklist of the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. Bryologist 90: 77-173.

__________ 1991. Changes to the "Fifth checklist of the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada." Edition III. Bryologist 94: 396-400.

Evans, A. W. 1930. The Cladonia of Connecticut. Trans. Conn. Acad. Arts & Sci. 30: 357-510.

___________ 1944. Supplementary report on the Cladoniae of Connecticut. Trans. Conn. Acad. Arts Sci. 35: 519-626.

___________ 1950. Notes on the Cladoniae of Connecticut (IV). Rhodora 52: 77-123.

___________ & G. E. Nichols. 1908. The bryophytes of Connecticut. State Geol. Nat. Hist. Survey Bull. II: 1-203.

___________ & R. Meyrowitz. 1926. Catalogue of the lichens of Connecticut. Conn. State Geol. Nat. Hist. Survey Bull. 37: 1-56.

Hale, M. E. 1950. The lichens of Aton Forest, Connecticut. Bryologist 53: 181-213.

Stotler, R. & B. Crandall-Stotler. 1977. A checklist of the liverworts and hornsworts of North America. Bryologist 80: 405-428.

The genus *Fissidens* (Musci) in Maine

Bruce Allen[1] & Ronald A. Pursell[2]

Fissidens, the sole genus in the Fissidentaceae, is distinguished from other mosses by its unique leaf structure. The leaves and their arrangement on the stem, are reminiscent of the genus *Iris*. In both genera the leaves are inserted on or appear to strattle two, opposite sides of the stem, i.e., they are distichous (Fig. 1).

Each leaf of *Fissidens* consists of five distinct parts: two vaginant laminae (Fig. 1a); a dorsal lamina (Fig. 1b); a ventral or apical lamina (Fig. 1c); and a vein-like costa (Fig. 1d). In nearly all species of *Fissidens* the costa ends in or near the leaf apex, and divides the leaf more or less in half. The dorsal lamina occupies the entire lower half, while the upper half consists of the vaginant and ventral laminae. The two vaginant laminae clasp the stem and in most species resemble the prow of a boat.

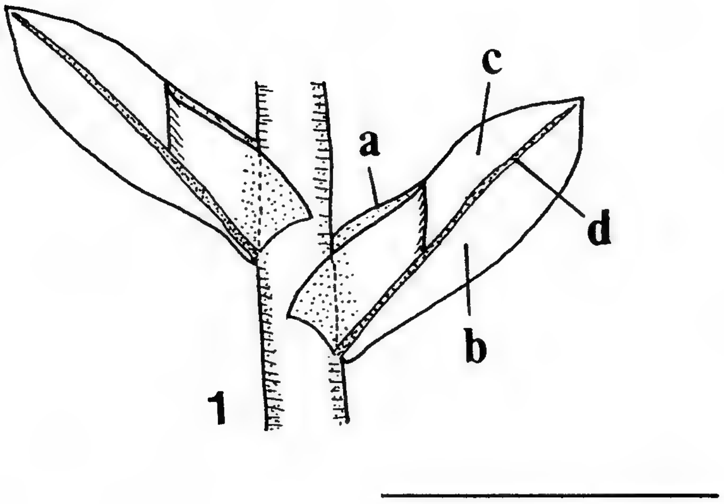

Figure 1. *Fissidens* leaves on stem. Scale = 1 mm.

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Key to the species of *Fissidens* in or expected to be found in Maine

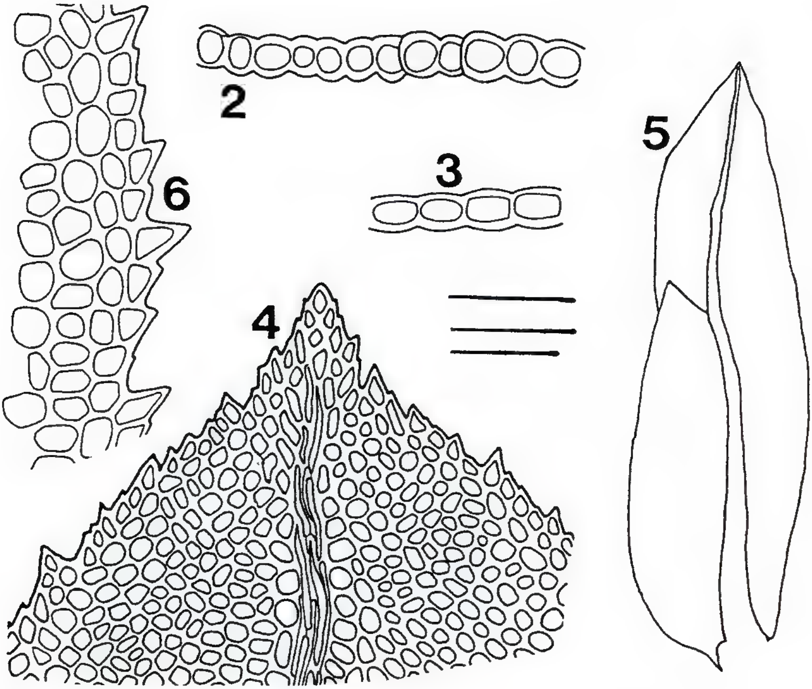
1. Leaves bordered completely or in part by several rows of long, narrow, yellowish cells .... 2. *F. bryoides* (complex)
1. Leaves not bordered by long, narrow cells, marginal cells sometimes lighter in color than inner laminal cells .... 2.
2. Plants strictly aquatic (submerged in water) .... 3.
2. Plants terrestrial, saxicolous, or corticolous, sometimes found near or temporarily in water .... 4.
3. Leaves rigid and coarse; laminal cells 2 or more layers thick ..... 6. [*F. grandifrons*]
3. Leaves soft; laminal cells one layer thick .... 5. [*F. fontanus*]
4. Sporophytes (or archegonia) terminal .... 7. *F. osmundioides*
4. Sporophytes (or archegonia) lateral, basal or nearly so, or not seen .... 5.
5. Distal ends of costae obscured by short, chlorophyllose cells identical with laminal cells .... 8. [*F. subbasilaris*]
5. Costae conspicuous throughout their length .... 6.
6. Leaf apices acute; leaf margins irregularly serrate above, crenulate below .... 7.
6. Leaf apices broadly acute to rounded, sometimes apiculate; leaf margins evenly crenulate all around, occasionally serrulate at the leaf apices ...... 8.
7. Leaf cells 5-9 μm, irregularly bistratose, bulging .... 4. *F. dubius*
7. Leaf cells 10-20 μm, unistratose, usually not bulging .... 1. *F. adianthoides*
8. Costae ending several cells below the leaf apices .... 7. *F. osmundioides*
8. Costae ending in cuspidate apices .... 9.
9. Leaf cells irregularly bistratose; each vaginant laminal cell with two or more small papillae usually over lateral walls .... 3. *F. bushii*
9. Leaf cells unistratose; each vaginant laminal cell with a blunt, conic papillae .... 9. [*F. taxifolius*]

1. ***Fissidens adianthoides*** Hedw., Sp. Musc., p.157. 1801.

Plants large, firm, 10-35(-90) mm high. Leaves 1.5-4.5 mm long, apices acute; margins crenulate below, unevenly serrate at the apex, not bordered by hyaline, linear cells, but a border of 4-5 rows of paler cells commonly present; costa ending 2-3 cells below the apex, occasionally appearing percurrent; cells 10-20 μm, unistratose, smooth to slightly bulging, commonly pellucid, hexagonal; cells of the vaginant laminae smooth. Setae lateral, 7-15 mm long, capsules 1-1.5 mm long, suberect to inclined.

In moist woods on soil, rotten logs, stumps in bogs and fens, and rocks or cliffs along streams, often in the spray of waterfalls. In Maine known from nine counties: Aroostook, Cumberland, Franklin, Hancock, Kennebec, Oxford, Piscataquis, Sagadahoc, and Somerset.

This is the largest species of *Fissidens* in Maine, and its leaf margins are sharply serrate above. The only other Maine *Fissidens* with this feature is *F. dubius* which has smaller, irregularly bistratose, and bulging leaf cells. When its leaf margins are only weakly serrate and sporophytes are absent, *F. adianthoides* can be difficult to separate from *F. osmundioides*. Plants of *F. osmundioides*, however, are usually smaller and its costae generally end 4-11 cells below the leaf apices. But, costal length in these two species is variable, even within single plants. In evaluating this character a number of leaves should be examined with close attention paid to the uppermost leaves. When identification is in doubt, the presence of roughened (papillose) major rhizoids in *F. osmundioides* will conclusively separate it from *F. adianthoides* which has smooth major rhizoids. Smaller or minor rhizoids in both species may appear roughened. In addition, sporophytes (or archegonia) are terminal in *F. osmundioides* but lateral (nearly basal) in *F. adianthoides*. The leaf apex of this species (fig. 4) has been drawn at half the magnification of the leaf apex figures for the other species.



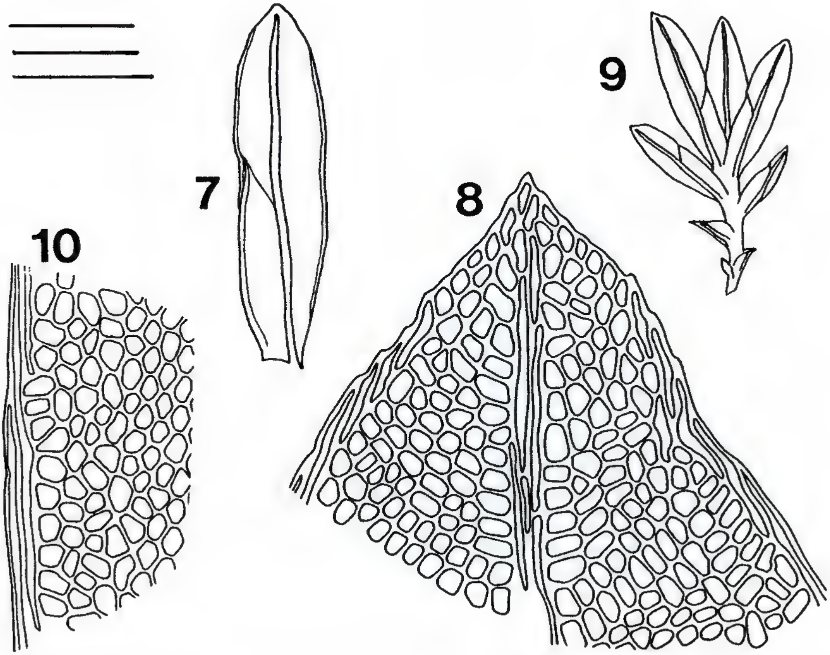
Figures 2-6. *Fissidens adianthoides*. 2. Cross-section apical lamina. 3. Cross-section vaginant lamina. 4. Leaf apex. 5. Leaf. 6. Upper leaf margin. Scales in mm: top = 0.012 (2, 3, 6); middle = 0.025 (4); bottom = 0.25 (5).

2. ***Fissidens bryoides*** Hedw., Sp. Musc., p. 153. 1801.

Plants small, firm, to ca 7 mm high. Leaves 1-2 mm long, apices acute, acuminate or obtuse-apiculate; margins entire, bordered by 2 or more rows of hyaline or yellowish, linear cells on all laminae, border extending to or near the leaf apex; costa ending slightly below the apex, or percurrent, or extending into the apiculus and appearing confluent with the border; cells (6-)9-13(-16) μm, unistratose, smooth, hexagonal; cells of the vaginant laminae smooth. Setae terminal, 3-7 mm long, capsules 0.5-1 mm long, erect or curved and inclined.

On soil in moist areas and on small rocks and boulders along streams. In Maine the species is known from seven counties: Cumberland, Hancock, Kennebec, Knox, Penobscot, Oxford, and Somerset.

This is the only *Fissidens* in Maine with leaves bordered by long, narrow, yellowish cells. A common species throughout eastern North America, it is frequently overlooked because of its small size. It is often found on rocks that are seasonally submerged in and along streams.



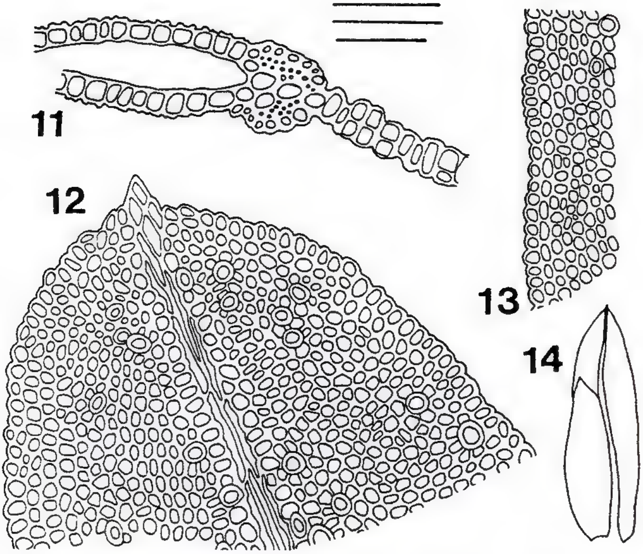
Figures 7-10. *Fissidens bryoides*. 7. Leaf. 8. Leaf apex. 9. Plant. 10. Leaf margin. Scales in mm: top = 0.012 (6, 10); middle = 0.12 (7); bottom = 0.25 (9).

Fissidens bryoides is the oldest name for a complex of four taxa now considered a single polymorphic species. There are two expressions present in Maine: the *minutulus*-expression and the *pusillus*-expression. The four expressions of the *F. bryoides* complex can be distinguished by the following key.

1. Plants gonioautoicous; limbidia confluent at leaf apices .... *bryoides*-expression
1. Plants rhizoautoicous; limbidia ending below leaf apices .... 2.
    2. Leaves inserted on stems at angles of 45° or more; plants usually on soil .... *viridulus*-expression
    2. Leaves inserted on stems at angles of less than 45° plants usually on stones or rocks .... 3.
3. Leaves narrowly lanceolate to oblong-lanceolate; apices acute to short acuminate .... *minutulus*-expression
3. Leaves lanceolate, often broadly so, to ligulate; apices broadly acute to obtuse apiculate .... *pusillus*-expression

3. ***Fissidens bushii*** (Card. & Thér.) Card. & Thér., Bot. Gaz. 37: 365. 1904.

Plants small, firm, 4-7 mm high. Leaves 1.0-1.5 mm long, apices broadly acute to rounded-obtuse, each abruptly narrowed to a small, pellucid apiculus; margins crenulate all around, occasionally serrulate distally, not bordered by hyaline, linear cells, but marginal cells commonly paler; costa ending in the apiculus; cells 7-9 μm,



Figures 11-14. *Fissidens bushii*. 11. Cross-section lower leaf. 12. Leaf apex. 13. Leaf margin. 14. Leaf. Scales in mm: top 0.012 (12, 13); middle 0.025 (11); bottom 0.25 (14).

irregularly bistratose, distinctly bulging, obscure, rounded-hexagonal; cells of the vaginant laminae with 2 or more low papillae over lateral walls. Setae basal, 6-10 mm long, capsules 1 mm long, suberect to inclined.

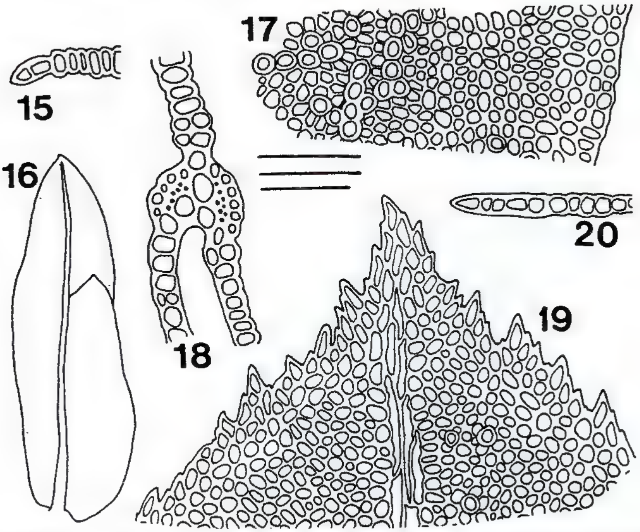
On bare soil in open woods, often in disturbed places, trail sides or roadbanks. In Maine known from two counties: Cumberland and Oxford.

This eastern North American endemic occurs from Nova Scotia, to Ontario, southwest to Oklahoma and Texas and southeast to Florida. Although widespread, it is infrequently collected and commonly misidentified. Its small, irregularly bistratose leaf cells will distinguish it from all other *Fissidens* species except *F. dubius*. It differs from that species by its evenly crenulate leaf margins and pluri-papillose vaginant laminal cells.

4. ***Fissidens dubius*** P. Beauv., Prodr. 57. 1805.

Fissidens cristatus Wils. ex Mitt. J. Linn. Soc., Bot. 1(Suppl.): 137. 1859.

Plants medium, firm, 10-20 mm high. Leaves 1-3 mm long, apices acute; margins crenulate below, unevenly serrate at the apex, not bordered by yellowish to hyaline, linear cells, but several rows of marginal cells distinctly paler; costa ending 2-3 cells below the apex, occasionally appearing percurrent; cells 6-9 μm, irregularly bistratose, strongly bulging, rounded-hexagonal; cells of the vaginant laminae smooth. Setae lateral, 5-10 mm long, capsules 1.2-1.9 mm long, suberect to inclined.



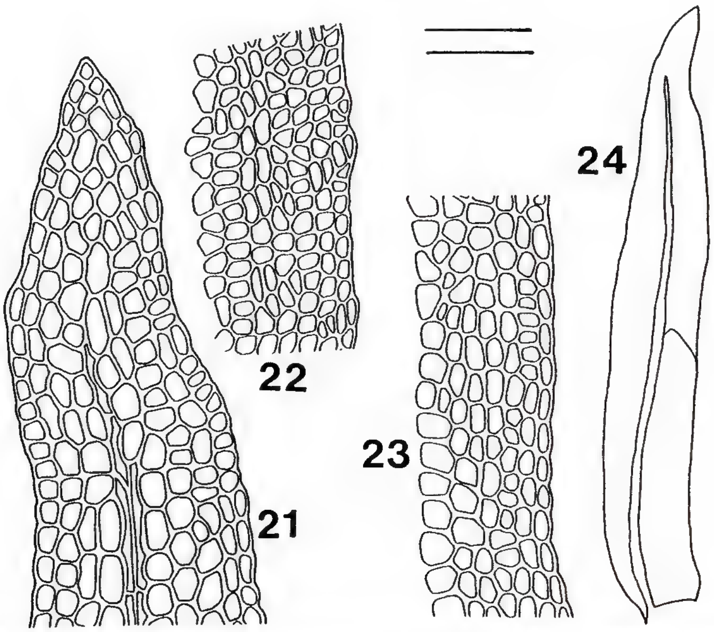
Figures 15-20. *Fissidens dubius*. 15. Cross-section upper leaf margin. 16. Leaf. 17. Mid-leaf margin and cells. 18. Cross-section lower leaf. 19. Leaf apex. 20. Cross-section vaginant lamina. Scales in mm: top = 0.012 (17, 19); middle = 0.025 (15, 18, 20); bottom 0.25 (16).

On bare soil, rocks and boulders, on bark at base of trees, and on rotten wood. In Maine known from ten counties: Androscoggin, Cumberland, Franklin, Hancock, Knox, Oxford, Penobscot, Piscataquis, Somerset, and Waldo.

This species, better known as *F. cristatus*, is the most commonly collected species of *Fissidens* in Maine. It has nearly the same distribution in eastern North America as *F. bushii*, but a much broader ecological tolerance. Its sharp, irregularly serrate upper leaf margins separate it from all Maine *Fissidens* except *F. adianthoides*. From that species it differs in its smaller size, and smaller, strongly bulging, irregularly bistratose leaf cells. *Fissidens bushii* has similar cells, but broadly acute leaves, evenly crenulate leaf margins and pluri-papillose vaginant laminal cells.

5. ***Fissidens fontanus*** (B.-Pyl.) Steud., Nomencl. Bot. Plant. Crypt. p. 166. 1824.

Plants medium to large, soft, 3-12 mm high. Leaves 4-8 mm long, flaccid, linear-lanceolate, apices acute; margins crenulate all around, not bordered by hyaline, linear cells, nor by rows of paler cells, but marginal cells smaller than interior cells; costa ending well below the apex; cells 12-21 µm, unistratose, smooth not bulging, pellucid, irregularly hexagonal; cells of the vaginant laminae smooth. Setae in axillary clusters of 1-5, 1-1.5 mm long, capsules 0.5-1 mm long, erect.



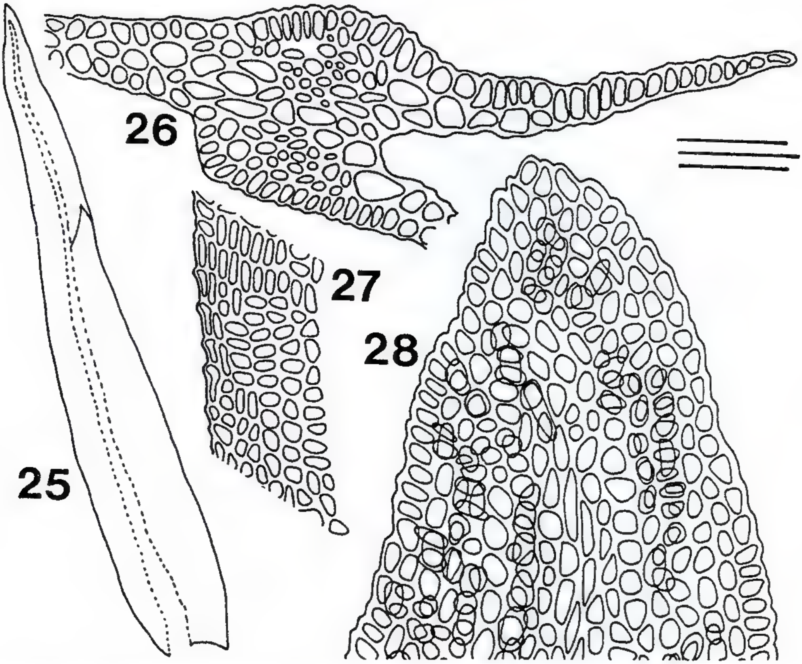
Figures 21-24. *Fissidens fontanus*. 21. Leaf apex. 22. Upper leaf margin and cells. 23. Vaginant lamina margin and cells. 24. Leaf. Scales in mm: top = 0.012 (21-23); bottom 0.25 (24).

On rocks, sticks or logs submerged in springs or streams, associated with still or slowly moving water. Not known from Maine.

This species is characterized by its aquatic habit and soft, flaccid, linear-lanceolate leaves. *Fissidens grandifrons*, another strictly aquatic species, has multistratose leaves and is found in fast moving streams. *Fissidens fontanus* should be expected in southern Maine since it has been found in Vermont (Grout & Dole 1932), Connecticut (Evans & Nichols 1908), and Massachusetts (Hilferty 1960).

6. ***Fissidens grandifrons*** Brid., Musc. Recent. Suppl., vol. 1, p.170. 1806.

Plants large, rigid, 1.5-10 cm high, dark-green or blackish. Leaves 3-4.5 mm long, apices bluntly acute; margins crenulate all around, not bordered by hyaline, linear cells, nor by rows of paler cells; costa ending below the apex; cells 7-12 μm, multistratose throughout or unistratose only at margins, bulging, incrassate, smooth, irregularly rounded-hexagonal; cells of the vaginant laminae smooth. Sporophytes not known from North America.



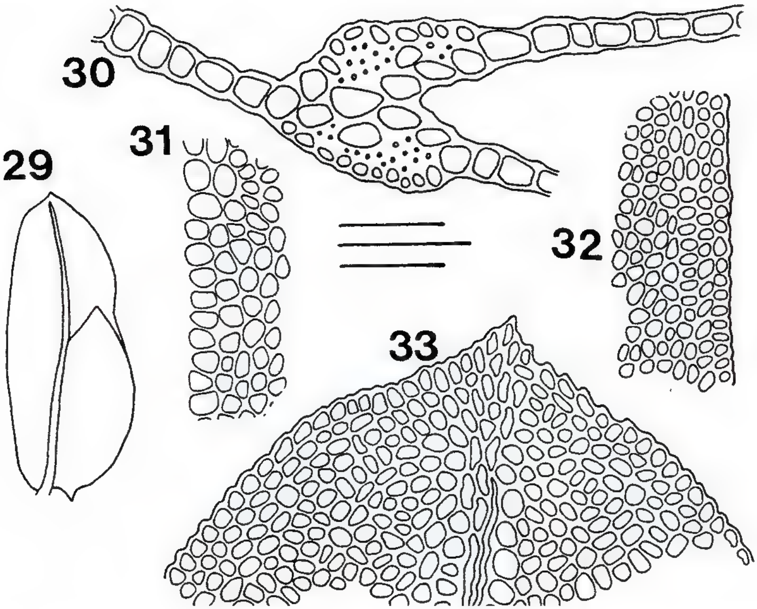
Figures 25-28. *Fissidens grandifrons*. 25. Leaf. 26. Cross-section lower leaf. 27. Vaginant lamina margin and cells. 28. Leaf apex. Scales in mm: top = 0.012 (27, 28); middle = 0.025 (26) bottom 0.25 (25).

On calcareous rocks and pebbles submerged in springs or fast moving streams. Not known from Maine.

This distinctive aquatic species is recognized by its presence in fast moving streams, dark-green to blackish color and multistratose leaf cells. The leaves are rigid and unaltered whether wet or dry. The closest station for this moss is central New York (Ketchledge 1980).

7. ***Fissidens osmundioides*** Hedw., Sp. Musc., p. 153. 1801.

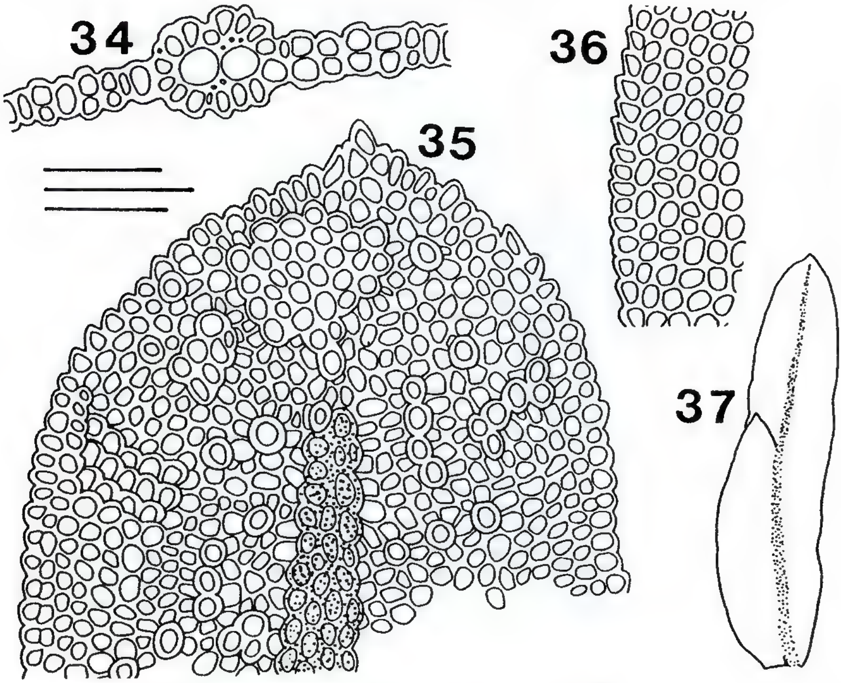
Plants medium, firm, 5-12(-40) mm high. Leaves 1.5-2.2 mm long, apices broadly acute to rounded, apiculate; margins crenulate all around or crenulate below, serrulate at the apex, not bordered by hyaline, linear cells, but marginal cells often paler; costa ending 4-9 cells below the apex, short costae especially noticeable in uppermost leaves; cells 10-14 μm, unistratose, smooth to slightly bulging, irregularly hexagonal; cells of the vaginant laminae smooth. Setae terminal, 3-7 mm long, capsules 1-1.5 mm long, suberect to inclined.



Figures 29-33. *Fissidens osmundioides*. 29. Leaf. 30. Cross-section lower leaf. 31. Leaf cells near costa. 32. Vaginant lamina margin and cells. 33 leaf apex. Scales in mm: top = 0.012 (31-33); middle = 0.025 (30) bottom 0.25 (29).

On soil or humus over rocks and at base of trees, occasionally on bare rock or bark in moist places such as stream banks, cedar swamps or bogs. In Maine known from nine counties: Androscoggin, Aroostook, Cumberland, Hancock, Kennebec, Lincoln, Oxford, Penobscot, and Somerset.

This is the only *Fissidens* species in Maine with unbordered leaves and terminal sporophytes. Its crenulate to serrulate leaf margins and costae that end 4-9 cells below the leaf apices are also distinctive. Costal length in this species is variable, even within single plants. Generally the lower leaves have longer costae while the uppermost leaves have distinctly shorter costae. Some expressions of *F. adianthoides* closely approach this species, but that species has larger leaves and larger leaf cells, a broader leaf apex, at least some leaves with nearly percurrent costae, and irregularly serrate upper leaf margins. Also, *F. adianthoides* has smooth major rhizoids as opposed to the papillose ones of *F. osmundioides* and nearly basal rather than terminal sporophytes (or archegonia).



Figures 34-37. *Fissidens subbasilaris*. 34. Cross-section upper leaf. 35. Leaf apex. 36. Vaginant lamina margin and cells. 37. Leaf. Scales in mm: top = 0.012 (35, 36); middle = 0.025 (34) bottom 0.25 (37).

8. ***Fissidens subbasilaris*** Hedw., Sp. Musc., p.155. 1801.

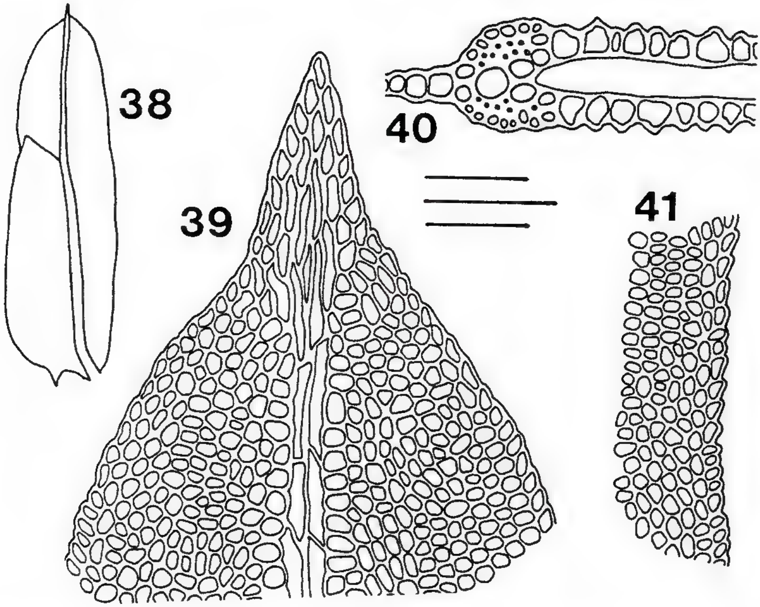
Plants small, firm, 4-10 mm high. Leaves 1-1.5 mm long, apices broadly acute to rounded obtuse; margins evenly crenulate all around, not bordered by hyaline, linear cells but marginal cells sometimes paler; costa ending 6-20 cells below the apex, covered and obscured by short, green, laminal-like cells; cells 7-9 μm, irregularly bistratose, bulging, rounded-hexagonal; cells of the vaginant laminae smooth. Setae lateral, 2.5-4.0 mm long, capsules 1.5 mm long, erect.

On tree trunks or bare calcareous rocks and boulders. The single report of this species in Maine (Androscoggin County, Parlin 1939), has not been verified.

Fissidens subbasilaris is a small species with short costae that are covered in the upper parts by rounded, green cells identical in form to the laminal cells. The species is also known from Massachusetts (Hilferty 1960) and Connecticut (Evans & Nichols 1908).

9. ***Fissidens taxifolius*** Hedw., Sp. Musc., p. 155. 1801.

Plants small to medium, firm, 4-10 mm high. Leaves 1.5-2.2 mm long, apices obtuse to broadly acute, apiculate or cuspidate; margins crenulate, occasionally



Figures 38-41. *Fissidens taxifolius*. 38. Leaf. 39. Leaf apex. 40.Cross-section lower leaf. 41. Vaginant lamina margin and cells. Scales in mm: top = 0.012 (39, 41); middle = 0.025 (40) bottom 0.25 (38).

serrulate at the apex, not bordered by hyaline, linear cells, but marginal cells sometimes paler; costa percurrent in an apiculate to stout cuspidate tip; cells 7-11 μm, unistratose, slightly bulging, commonly pellucid, rounded-hexagonal; cells of the vaginant laminae each with a blunt, conic papilla. Setae lateral, 8-11 mm long, capsules 1.2-1.5 mm long, suberect to inclined.

On soil, humus over rocks and on tree bases. Reported but not verified from Androscoggin, Kennebec, Oxford, and Waldo Counties (Pitman 1928, 1929; Parlin 1923, 1939).

Fissidens taxifolius has lateral sporophytes, evenly crenulate leaf margins and a costa that disappears into a cuspidate leaf tip. Its best diagnostic character is the stoutly mammillose outer cell walls of the vaginant laminae. This common and widespread eastern North America species, known from Nova Scotia (Ireland 1982) and Massachusetts (Hilferty 1960), should occur in Maine.

Literature Cited.

Evans, A. W. & G. E. Nichols. 1908. The bryophytes of Connecticut. Connecticut State Geological and Natural History Survey Bulletin 11: 1-203.

Grout, A. J. & E. J. Dole. 1932. The Mosses of Vermont. Vermont Botanical and Bird Clubs 15: 23-53.

Hilferty F. J. 1960. The mosses of Massachusetts a county catalogue with annotations. Rhodora 62: 145-173.

Ireland, R. R. 1982. Moss Flora of the Maritime Provinces. National Museum of Canada, Publications in Botany, No. 8. Ottawa.

Ketchledge, E. H. 1980. Revised checklist of the mosses of New York State. New York State Museum Bulletin 440: vii + 19 pp.

Parlin, J. C. 1923. Maine Mosses. Maine Naturalist 3: 60-61.

_____. 1939. Some Maine Lichens, Hepatics and Mosses. Bulletin Joselyn Botanical Society, Maine 7: 30-59.

Pitman. E. M. 1928. A partial list of mosmosses found in Winthrop, Maine. Maine Naturalist 8: 131.

_____. 1929. Moss notes from the Pine Tree State. Bryologist 32: 92-93.

New State Records for Mosses

William R. Buck[1]

During the course of general collecting in the United States in the past several months, spurred on by the inclusion of mosses in the *Flora of North America*, I have come across a number of new state records for mosses. I use this opportunity to document these records so that the information will be available to researchers collaborating with this project. A number of species, although not new to a particular state, are apparently rare in those states, and short note is made of them. All specimens are deposited at NY. As complete a set as possible of the Alabama collections is deposited at UNA.

Alabama

Bryhnia novae-angliae (Sull. & Lesq.) Grout - Winston County: Bankhead National Forest, Sipsey Wilderness, along trail by Sipsey Fork at Co. Rd. 60, ca. 120 m, 25 Sep 1992, *W. R. Buck 21822, 21857*. This species was previously known in the Southeast from the mountains of North Carolina and Georgia, and then jumping to Arkansas (Crum & Anderson, 1981: p. 1056).

Campylopus fragilis (Brid.) B.S.G. - Clay County: Cheaha State Park, trail to Bald Rock, ca. 650 m, 24 Sep 1992, *W. R. Buck 21786*. In eastern North America, this species was previously known only from Arkansas (Frahm, 1980: pp. 578, 585), although I have also collected it in Florida (Okaloosa County: 1.2 mi W of Fla. Hwy 85 on Antioch Road, ca. 4 mi S of Crestview, 5 May 1990, *W. R. Buck 17913, 17924*).

Dichodontium pellucidum (Hedw.) Schimp. - Winston County: Bankhead National Forest, Sipsey Wilderness, along trail by Sipsey Fork at Co. Rd. 60, ca. 120 m, 25 Sep 1992, *W. R. Buck 21867*. Crum and Anderson (1981: p. 186) reported this species in the South from North Carolina and Tennessee; as in its more northerly localities, the plants grew on rock near a river.

Dicranum montanum Hedw. - Clay County: Cheaha State Park, trail to Bald Rock, ca. 650 m, 24 Sep 1992, *W. R. Buck 21775, 21778*. This species was mapped by Peterson (1979: p. 81) and shown to occur down the Appalachians to North Carolina, Tennessee and northeastern Georgia, then disjunct to the western Ozarks.

Isopterygiopsis muelleriana (Schimp.) Iwats. - Winston County: Bankhead National Forest, Sipsey Wilderness, along trail by Sipsey Fork at Co. Rd. 60, ca. 120 m, 25 Sep 1992, *W. R. Buck 21868*. In the United States, this species was previously known from as far south as Arkansas, North and South Carolina, and Tennessee (Ireland, 1969: pp. 53, 117).

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[1] New York Botanical Garden, Bronx, NY 10458-5126

Oxystegus tenuirostris (Hook. & Tayl.) A.J.E. Sm. - Winston County: Bankhead National Forest, Sipsey Wilderness, along trail by Sipsey Fork at Co. Rd. 60, ca. 120 m, 25 Sep 1992, *W. R. Buck 21864*. A published map (Crum & Anderson, 1958: p. 35) indicates this species' range in the Southeast as Georgia, North and South Carolina, and Tennessee.

The locality at Sipsey Wilderness is particularly rich for mosses, in addition to the above-mentioned species new for Alabama, the following species, apparently rare or little-collected in Alabama, were also collected there.

Cyrto-hypnum pygmaeum (B.S.G.) Buck & Crum (*Buck 21831*)
Herpetineuron toccoae (Sull. & Lesq.) Card.(*Buck 21869*)
Pseudotaxiphyllum distichaceum (Mitt.) Iwats. (*Buck 21830*; also collected at Cheaha State Park, *Buck 21771*)
Sematophyllum marylandicum (C. Muell.) Britt. (*Buck 21825*)

Georgia

Entodon brevisetus (Hook. & Wils.) Lindb. - Towns/Rabun counties: Chattahoochee National Forest, along Appalachian Trail between Dicks Creek Gap and Little Bald Knob, at US 76, 825-900 m, 21 Sep 1992, *W. R. Buck 21670*; Murray County: Chattahoochee National Forest, Cohutta Wilderness, Tearbritches Trail from Forest Serv. Rd. 68 to Bald Mountain, 1100-1200 m, 22 Sep 1992, *W. R. Buck 21703, 21705*. This uncommon species was previously reported from as far south as North Carolina (Crum & Anderson, 1981: p. 1086). It has probably been overlooked because its field aspect is similar to the weedy *E. seductrix* (Hedw.) C. Muell.

Fontinalis welchiana Allen - Walker County: Chattahoochee National Forest, Keown Falls, ca. 500 m, 23 Sep 1992, *W. R. Buck 21766*, det. B. Allen. This principally Ozarkian species (Allen, 1988: p. 183) most recently had its reported range extended to northeastern Alabama (Bowers et al., 1989, p. 483).

Mississippi

Cryphaea ravenelii Aust. - Tishomingo County: Tishomingo State Park, on trail across Swinging Bridge, 100-120 m, 27 Sep 1992, *W. R. Buck 21936*. The distribution of this rare species was recorded as Tennessee, South Carolina, northern Georgia, southwestern Arkansas and southeastern Oklahoma (Manuel, 1973: p. 145).

Ephemerum crassinervium (Schwaegr.) Hampe - Itawamba County: Donivan Slough, Mile 283.3 along Natchez Trace Parkway, ca. 35 m, 28 Sep 1992, *W. R. Buck 21978*; Jackson County: Bienville National Forest, Co. Rd. 506 at Little Tallahala Creek, ca. 35 m, 30 Sep 1992, *W. R. Buck 22098*; Scott County: Bienville National Forest, Bienville Pines Scenic Area, just SE of Forest, ca.

100 m, 29 Sep 1992, *W. R. Buck 22049*. Although widely distributed along the Gulf Coast from Florida to Louisiana and eastern Texas (Crum & Anderson, 1981: p. 478; Reese, 1984: p. 123), I can find no specific record for Mississippi.

Ephemerum spinulosum Bruch & Schimp. - Lauderdale County: E shore of Chunky River at Stuckey Bridge, 30 Sep 1992, *W. R. Buck 22133*. Known from Florida, Louisiana and Texas (Crum & Anderson, 1981: p. 476), this seems to be the first report for Mississippi.

Haplocladium virginianum (Brid.) Broth. - Itawamba County. Donivan Slough, Mile 283.3 along Natchez Trace Parkway, ca. 35 m, 28 Sep 1992, *W. R. Buck 21971*. This species was previously known from as far south as Georgia, Arkansas and Texas (Crum & Anderson, 1981: p. 894).

Micromitrium megalosporum Aust. - Scott County: Bienville National Forest, Caney Creek Wildlife Management Area, along Forest Serv. Rd. 518, 1 mi E of Co. Rd. 501, ca. 100 m, 29 Sep 1992, *W. R. Buck 22053*. This pygmy was reported from Florida and Louisiana by Crum and Anderson (1981: p. 482).

Other interesting records of mosses, though not new to Mississippi, include:

Cryphaea nervosa (Hook. & Wils.) C. Muell. - Jasper County: Bienville National Forest, Co. Rd. 506 at Little Tallahala Creek, ca. 35 m, 30 Sep 1992, *W. R. Buck 22090*. In Mississippi this species was previously recorded only from the southwesternmost corner (Manuel, 1973: p. 145); it was growing together with *C. glomerata* B.S.G. ex Sull.

Helodium paludosum (Sull.) Aust. - Smith County: Bienville National Forest, Marathon Lake Recreation Area, 30 Sep 1992, *W. R. Buck 22061, 22063, 22070*. Mississippi is apparently the southernmost locality for this moss (Crum & Anderson, 1981: p. 916), although it was relatively common at this locality, growing on soil in a grassy area around a lake.

New Jersey

Fissidens exilis Hedw. - Hunterdon County: Delaware Township, between Upper Creek Road and Pine Hill Road, ca. 100 m, 3-4 Nov 1992, *W. R. Buck 22181*. First reported in North America from Ohio (Steere, 1950: p. 134), it has since been found rather widely in northeastern North America (Crum & Anderson, 1981: p. 95), but not in New Jersey (Karlin & Schaffroth, 1992). Its apparent rarity may be due to the fact that the gametophores are a fall/spring ephemeral from persistent protonemata.

Acknowledgments. I thank my field companions for their company and good cheer: first and foremost is Dick Harris; in Mississippi Lewis Anderson's knowledge and sarcasm were a delight; in New Jersey John Mitchell generously provided transportation, lodging, and his company. Thanks go to Bruce Allen for identifying the *Fontinalis*, especially when no one else can!

Literature Cited

Allen, B. H. 1988. Studies on the genus *Fontinalis* (Musci: Fontinalaceae). Brittonia 40: 180-187.

Bowers, F. D., R. R. Haynes & S. L. Timme. 1989. New or rare mosses of Alabama north of the Coastal Plain and Piedmont. Bryologist 92: 482-484.

Crum, H. & L. E. Anderson. 1958. Taxonomic studies on North American mosses. VI-XIII. J. Elisha Mitchell Sci. Soc. 74: 31-40.

_____ & _____. 1981. Mosses of Eastern North America. 2 vols. Columbia University Press, New York.

Frahm, J.-P. 1980 [1981]. Synopsis of the genus *Campylopus* in North America north of Mexico. Bryologist 83: 570-588.

Ireland, R. R. 1969. A taxonomic revision of the genus *Plagiothecium* for North America, north of Mexico. Natl. Mus. Nat. Sci. Publ. Bot. 1: i-viii, 1-118.

Karlin, E. F. & K. A. Schaffroth. 1992. The mosses of New Jersey. Evansia 9: 11-32.

Manuel, M. G. 1973. Studies in Cryphaeaceae I. A revision of the genus *Cryphaea* in North America north of Mexico. Bryologist 76: 144-162.

Peterson, W. 1979. A revision of the genera *Dicranum* and *Orthodicranum* (Musci) in North America north of Mexico. Ph. D. Dissertation, University of Alberta.

Reese, W. D. 1984. Mosses of the Gulf South from the Rio Grand to the Apalachicola. 252 pp. Louisiana State Univ. Press. Baton Rouge.

Steere, W. C. 1950. Notes on *Fissidens*. II. The discovery of *Fissidens exilis* in North America. Bryologist 53: 131-136.

Biology of Mosses

A four semester-hour credit course will be taught this summer, 18 July-21 August 1993, at Mountain Lake Biological Station by Ann Stoneburner and Robert Wyatt of the University of Georgia. Mountain lake, located in the Allegheny Mountains near Blacksburg in southwestern Virginia, offers a rich and diverse bryophyte flora. The field course will take an evolutionary approach and include lectures on systematics and morphology with emphasis on the natural communities and ecology of the Southern Appalachians.

For additional information or an application, write to: Director, Mountain Lake Biological Station, Gilmer Hall, University of Virginia, Charlottesville, VA 22901.

Mosses New or Confirmed for Some Canadian Provinces

Robert R. Ireland[1]

Continuing studies on the moss flora of Canada have resulted in several additions since the last checklist of the mosses for the country (Ireland *et al.* 1987). Reported here, and indicated by an asterisk, are four mosses new to Ontario, one new to Quebec and five new to Saskatchewan. Also included are confirmed records for three mosses which were previously reported in the checklist on the basis of literature reports only. The distribution following each taxon is that used in the checklist. Voucher specimens of all taxa are deposited in the Bryophyte Herbarium of the Canadian Museum of Nature (CANM) and a few are duplicated in the University of Regina (USAS) as indicated. The nomenclature follows that of Anderson, Crum & Buck (1990) and Anderson (1990).

Ontario

******Drepanocladus brevifolius (Lindb.) Warnst.* - Cochrane District: Habel Twp., across from mouth of Soweska R., 50° 21' N, 82° 38' W, *Shea 13667, 14552.* Also known from Alberta, Manitoba, Quebec, Labrador, Yukon Territory, Northwest Territories and Arctic Archipelago.

* *Philonotis fontana* var. *americana* (Dism.) Flow. ex Crum - Cochrane District: Munro Twp., Sherman Mine Rd., 1.7 km NNW of Hwy. 101, 48° 33' N, 80° 09' W, *Gagnon 1268.* This is one of the more distinct of many varieties that have been described for *P. fontana.* It has been seen or reported for British Columbia, Saskatchewan, Quebec, Prince Edward Island, New Brunswick, Nova Scotia and Yukon Territory. The leaves that are twisted and in vertical rows are the most characteristic feature of this variety. Crum & Anderson (1981) believe all eastern North American specimens are "other expressions of *P. fontana*" and list this variety only from localities in the West.

* *Pogonatum dentatum* (Brid.) Brid. - Algoma District, 12 km NE of Wawa, 48° 03' N, 84° 46' W, *Ireland 24487.* With this report this species is presently known from all provinces and territories except Saskatchewan, Manitoba and Prince Edward Island.

Pohlia atropurpurea (Wahlenb. in Fürnr.) H. Lindb. - Cochrane District: Garden Twp., downstream from mouth of Pivabiska R., 107 m, 50° 12' W, 82° 55' W, *Shea 9415.* Reported by Macoun & Kindberg (1892) from Niagara Falls but no specimen could be found in CANM. Also seen or reported from British Columbia, Alberta, Manitoba, Quebec and Yukon Territory.

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Trichodon cylindricus (Hedw.) Schimp. - Sudbury District: Near French R., 1.5 km SE of Wolseley Bay, 46° 05' N, 80° 12' W, *Ireland 24295*. Reported by Lesquereux & James (1884) from Ontario, without specific locality, collected by Mrs. Roy but the voucher was not found. Seen or reported elsewhere from British Columbia, Alberta, Quebec, Labrador, Newfoundland, New Brunswick, Nova Scotia and Yukon Territory. Ireland (1978) mapped the North American distribution of this distinctive species. It is not uncommon in the western part of the continent, especially southwestern British Columbia and western Washington, but rare in the eastern part. The species is known from the Keweenaw Peninsula, Michigan and so was not unexpected on the north side of Lake Superior.

* *Warnstorfia pseudostraminea* (C. Müll.) Tuom. & T. Kop. - Kenora District: Morrison R., 55 km WSW of town of Bearskin Lake and 97 km NNW of town of Round Lake, 53° 47' N, 91° 47' W, *Gray 3486*. Now presently seen or reported from all provinces and territories except Saskatchewan and the Maritime Provinces.

Quebec

Leskea obscura Hedw. - Oka, pointe au Sable, *Dupret 656*. Reported from several collections by Lepage (1947) that could not be confirmed when the checklist was published. Known from Alberta, Saskatchewan, Manitoba and Ontario, and reported from New Brunswick and Nova Scotia.

* *Psilopilum laevigatum* (Wahlenb.) Lindb. - Nouveau Quebec: Near Camiapiscau Reservoir, ca. 54° N, 69° 30' W, *Roy 300-1*. Also seen or reported from Labrador, Yukon Territory and Arctic Archipelago.

Saskatchewan

* *Aulacomnium androgynum* (Hedw.) Schwaegr. - West Block of the Cypress Hills, W of the Biology Field Laboratory, *Ledingham 11312* (USAS). Recorded elsewhere in Canada from British Columbia, Alberta, Ontario, Quebec, Labrador, Maritime Provinces and Newfoundland.

* *Grimmia teretinervis* Limpr. - Roche Percee, S of Souris River Valley, *de Vries & Machmer 20056* (USAS). The North American distribution of this rare calciphile was studied recently (Ireland 1982). It also has been seen or reported from British Columbia, Alberta, Ontario, Quebec and the Northwest Territories.

* *Polytrichum swartzii* C. Hartm. - Patterson L., 59° 54' N, 102° 24' W, 15 July 1986, *Lamont et al*. (USAS). An arctic species previously known in Canada only from the Yukon Territory and the Northwest Territories. Long (1985) mapped its distribution in North America.

* *Racomitrium heterostichum* (Hedw.) Brid. - Arctic Butte, 59° 54' N, 102° 27' W, *Lamont PLB20* (USAS). A common and variable species now known or

reported from all Canadian provinces and territories except Manitoba and Prince Edward Island.

* *Sphagnum rubellum* Wils. - NW Patterson L., 59° 58' N, 102° 25' W, *Rowe PLB49, PLB50* (USAS). Alberta is presently the only Canadian province for which no specimens or literature reports are known for this common Sphagna.

Acknowledgments. I thank G. F. Ledingham, University of Regina, and L. Fortin, University of Montreal, for permitting me to publish their records. I am grateful to L. M. Ley, Canadian Museum of Nature, for comments on the manuscript.

Literature Cited

Anderson, L. E. 1990. A checklist of *Sphagnum* in North America north of Mexico. The Bryologist 93: 500-501.

_______, H. Crum & W. R. Buck. 1990. List of the mosses of North America north of Mexico. The Bryologist 93(4): 48-499.

Crum, H. A. & L. E. Anderson. 1981. Mosses of Eastern North America. 2 Vols., 1328 pp. Columbia University Press, New York.

Ireland, R. R. 1978. *Trichodon* in North America. The Bryologist 81: 150-154.

_______. 1982. *Grimmia teretinervis* (Musci; Grimmiaceae) in North America. The Bryologist 85: 332-334.

_______, G. R. Brassard, W. B. Schofield & D. H. Vitt. 1987. Checklist of the mosses of Canada II. Lindbergia 13: 1-62.

Lepage, E. 1947. Les lichens, les mousses et les hépatiques du Québec et leur rôle dans la formation du sol arable dans la région du bas de Québec de Lévis à Gaspé. Naturaliste Canadien Extract (fascicle 4, Les mousses): 125-283.

Lesquereux, L. & T. P. James. 1884. Manual of the Mosses of North America. Boston

Long, D. G. 1985. 1. Polytrichaceae. In: Mogensen, G. S. (ed.), Illustrated Moss Flora of Arctic North America and Greenland. Meddel. Gronland, Bioscience 17: 9-57.

Macoun, J. & N. C. Kindberg. 1892. Catalogue of Canadian Plants. Pt. 6, Musci. Geological Survey of Canada, Ottawa.

The Sphagna of Moss Island, New York

William R. Town & Marilou Pudiak [1]

Moss Island is a five acre island between the Mohawk River and the Barge Canal at Lock 17 in Little Falls, Herkimer Co., New York, U.S.A. (43°02'25"N 74°50'50"W). During geological history the area was periodically flooded at which times various rock formations were deposited. Little Falls Dolostone was deposited on top of Precambrian crystallines in the Late Cambrian Period (about 520 million years ago). In the Early Ordovician Period (about 490 million years ago), the Tribes Hill Formation (intertidal and shallow marine limestones and dolostones) were deposited and eventually eroded before the deposition of the Lowville Limestone (about 455 million years ago). The Lowville Limestone was eroded differentially and another deposit (the Trenton Limestone Group) was laid down. About 440 million years ago the Trenton Limestone deposition ceased and an influx of black muds from the east formed the Utica Black Shale. About 425 million years ago (early and middle Silurian Period) faulting occurred in the area in a NE to SW direction. Two million years ago, a divide in drainage stood at Little Falls separating a west-flowing and an east-flowing Mohawk River. As glaciers advanced south around the Adirondack Mountains (and eventually over them) they met at Little Falls and breached the Mohawk divide at Little Falls. About 10,000 to 12,000 years ago glacial meltwaters and Great Lakes waters went east through the Mohawk Valley to the Husdon River. As the waters rushed east, they further carved and lowered the Little Falls gap forming the falls and the carved large potholes (most noticeable on the north side of Moss Island and for which Moss Island is recognized as a National Historic Landmark by the National Park Service.)

The flora of Moss Island is reportedly very similar to that found in the Adirondacks; as the glaciers retreated, arctic mosses and other plants were succeeded by grasses and hardwoods in most areas except in the higher elevations of the Adirondacks and Moss Island. Because of the successional similarity between Moss Island and the higher elevations of the Adirondacks, a survey of the Sphagna of Moss Island was undertaken by the authors during the summers of 1990, 1991 and 1992 to determine any similarity and/or uniqueness of species between the two areas.

The western side of Moss Island is influenced by the prevailing winds which aid water drainage and appears to have more basic soil conditions. This region of Moss Island supports populations of Northern Bush-Honeysuckle *(Diervilla lonicera* Mill.), Alderleaf Buckthorn *(Rhamnus alnifolia* L'Her.) , Bearberry *(Arctostaphylos* sp.) , Blueberries *(Vaccinium* spp.), Juneberry *(Amelanchier* sp.) , Northern White Cedar *(Thuja occidentalis* L.), Black Tupelo *(Nyssa sylvatica* Marsh.), Witch Hazel *(Hamamelis virginiana* L.), Oaks *(Quercus* spp.), Red Maple (*Acer rubrum* L.) and Nannyberry *(Viburnum lentago* L.). Only a few *Sphagnum* containing sites were found on the western side of Moss Island and they were limited to shaded, damp Maple woods. Two species from section *Acutifolia* were identified: *Sphagnum fimbriatum* Wils. and *S. russowii* Warnst.

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The eastern portion of Moss Island is poorly drained and has numerous wet depressions. The soils are thin and acidic and support populations of Bearberry, Pale Laurel *(Kalmia polifolia* Wang.), Blueberries, Yellow Clintonia *(Clintonia borealis* (Ait.) Raf.), Flag Iris *(Iris* sp.), Canada Mayflower *(Maianthemum canadense* Desf.), Moccasin Flower *(Cypripedium acaule* Ait.), Bunchberry *(Cornus canadensis* L.), Black and Grey Birch *(Betula lenta* L. and *B. populifolia* Marsh.), Red and White Oaks *(Quercus rubra* L. and *Q. alba* L.), Nannyberry *(Viburnum lentago* L.), Striped Maple *(Acer pensylvanicum* L.), Red Maple, Witch Hazel and Hemlock *(Tsuga canadensis* (L.) Carr.). Most of the *Sphagnum* populations occur in the eastern portion of Moss Island.

In the eastern portion of Moss Island a total of 42 *Sphagnum*-containing sites were visited and 63 specimens were collected. Identification revealed a total of ten species as outlined below (numbers in parentheses indicate number of specimens of that species collected):

Sphagnum affine Ren. & Card. (1)
S. angustifolium (Russow) C. Jens. (3)
S. capillifolium (Ehrh.) Hedwig (6)
S. compactum DC. (2)
S. fallax (Klinggr.) Klinggr. (12)
S. fimbriatum Wils. (23)
S. flexuosum Dozy & Molk. (2)
S. girgensohnii Russow (2)
S. isoviitae Flatb. (2)
S. russowii Warnst. (10)

Of the ten different species of *Sphagnum* collected representing four of the eight Sections into which the genus is divided , six are widely distributed around the Northern Hemisphere *(S. angustifolium, S. capillifolium , S. compactum , S. fimbriatum, S. girgensohnii* and *S. russowii)* while the remaining four species have distributional patterns neither limited to nor highly concentrated in the Adirondacks. It is the authors conclusion that the *Sphagnum* species collected on Moss Island neither represent the diversity of *Sphagnum* species found in the Adirondacks nor contain any of the *Sphagnum* species unique or uncommonly found in the Adirondacks. It is suggested that *Sphagnum* succession on Moss Island is following patterns and species diversity typical of the Mohawk Valley Province rather than that of the Adirondacks partially because of the dissimilarity of rock types present and the resulting mineral and pH influences.

Vouchers specimens of all *Sphagna* collected are housed in the herbariums of S.U.N.Y. at Binghamton and The Paludiological Society, Inc. *Sphagnum* nomenclature is after Andrus, R. E. 1980. *Sphagnaceae (Peat Moss Family) of New York State*. Contrib. Fl. New York State III. Richard S. Mitchell (ed.). Bull. No. 442. The authors thank Dr. Richard E. Andrus, S.U.N.Y. at Binghamton for his aid with identifications.

Moss Records for South Texas

Cynthia M. Galloway & Charles L. Burandt, jr.[1]

While the bryoflora of Texas has been variously studied (Whitehouse & McAllister 1954; Mahler 1980; Reese 1989) the sheer size of the state (267,300 square miles or 171.1 million acres) leaves many areas unexplored and uncollected. One region that has been particularly neglected is that area between San Antonio and the Rio Grande River referred to here as south Texas (Fig. 1).

A cursory look at the bryological literature for the state yields few reports of collections from south Texas and would lead one to believe that there are few mosses to be found. Many of these reports have been of specimens found by collectors passing hurriedly through the region. The south Texas area, in fact, does not present the aspect of a typical moss haven. It is hot, arid, mostly flat and possesses a relatively monotone vegetation of shrubs, grasses and few trees.

Early reports of mosses from south Texas are those by Bartram (1928) in which he included mosses found in the San Antonio area and Clover (1937) who reported ten mosses from the Rio Grande Valley. Grout (1945) described two species of moss from Cameron County. Childs (1947) collected mosses between Houston and Corpus Christi but no specific locations were given.

Eula Whitehouse, both singly and with Fred McAllister, conducted comprehensive studies of the mosses of the state but reported few from south Texas. (Whitehouse 1952; Whitehouse & McAllister 1954). The number of mosses reported from several south Texas counties has remained relatively unchanged since Whitehouse's work in 1952 even though recent reports by Pursell & Reese (1963) and Redfearn (1981) added a few to the area.

The area surrounding Texas A&I University in Kingsville, Kleberg Co., Texas, served as a starting point for this study. Habitats normally associated with moss; streambeds, planters, bases of buildings, rocks and trees were investigated.

Neighboring counties were added when it became evident that mosses could be found in this area if one searched with persistance. Bexar and Cameron Counties were added to the study based on collections made by Tony Leal (Cameron Co.) and those made by the author (C.M.G.) while visiting San Antonio. Collections from Kenedy County were made by Martin Mendoza and Tony Leal (ML) and some Bexar

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County collections were made by Oliver L. Galloway. All other collections were made by the authors. Specimens are held in the private herbarium of C.M. Galloway. Nomenclature follows that of Anderson et al. (1990).

From this study it was found that south Texas supports a small but fairly diverse bryoflora. Based on the census of eight counties; Bexar, Cameron, Duval, Jim Wells, Kenedy, Kleberg, Live Oak and Nueces, 34 new county records were added, including one new record for the state. Prior to this study no mosses were reported from Duval or Kenedy Counties. Three species are now reported from Duval County while one species has been found in Kenedy County. Eleven species are now known from Live Oak County, although only one was reported in the literature. The known species from Kleberg County have increased from two to 12. Additions were also made to the bryoflora of Bexar (from 18 to 24 species) and Cameron (from 21 to 23 species) Counties. One moss was added to the known bryoflora of Jim Wells County while no

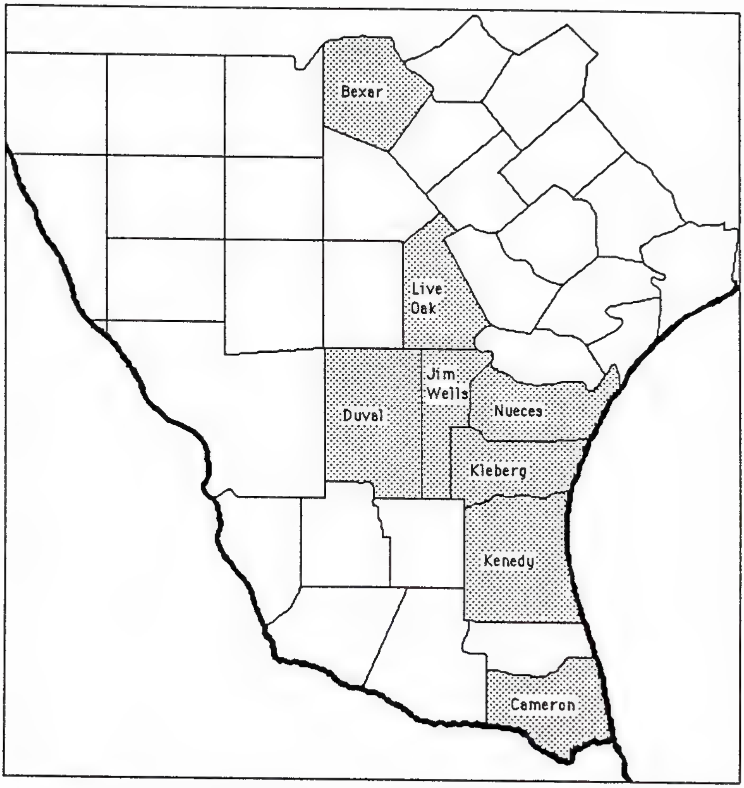

Figure 1. Map of south Texas. Counties from which mosses are reported are stippled.

additions were made to Nueces County; although mosses previously reported from Nueces County were recollected. The mosses found in all eight counties, either from collections in the present study or from the literature, are listed in Table 1. From these data, it would appear that the long standing scarcity of reports of mosses from south Texas is more an artifact of collection rather than there being few mosses.

New to Texas

Bryum radiculosum Brid. *sensu lato* - BEXAR CO. San Antonio. Along the San Antonio River, growing on soil in a grassy strip between the sidewalk and the river. Near the Navarro St. Bridge along the Riverwalk. *Galloway T-35*. KLEBERG CO. North of Kenedy-Kleberg County line. North shore of Laguna Salada at the end of FM 2510. At entrance to site 55, Texas A&I Experiment Station. Growing partially shaded on sandy soil overlying a wooden bridge. *Galloway T-1*. The tubers found on the rhizoids of these specimens are yellow to yellowish brown making it difficult, at times, to distinguish the tubers from grains of sand in the substrate. According to Crum and Anderson (1981), the tubers are more commonly red.

County Records

Aphanorrhegma serratum (Hook. f. & Wils. *in* Drumm). Sull. *in* Gray - DUVAL CO. San Diego. On moist clay bank of San Diego Creek. *Galloway & Burandt T-66*. This is only the third collection of this species in the state. The previous two collections have also been made in south Texas (Cameron and Zavala Counties).

Astomum muhlenbergianum (Sw.) Grout - BEXAR CO. San Antonio. On soil at McAllister Park off of Jones Maltsberger Road. *Galloway T-95*. This species is distributed in central and south Texas.

Astomum phascoides (Hook. *ex* Drumm.) Grout - KLEBERG CO. On sandy soil next to San Fernando Creek on the north-east side of Kingsville. One block S. of King Blvd. on the east side of Hwy 77. *Galloway & Burandt T-83*. This collection represents the southernmost distribution of this species in the United States. Previous collections in the state are concentrated in central Texas with one collection in west Texas and the other in north Texas.

Barbula indica (Hook.) Spreng. *in* Steud. var. *indica* - BEXAR CO. San Antonio. On soil along the San Antonio River. South of the Navarro St. Bridge. *Galloway T-32*. LIVE OAK CO. Along creek in Beldon Hollow where the creek crosses Hwy 534 at the south end of Lake Corpus Christi (formerly Mathis Lake). *Galloway & Burandt T-49b*. Widespread throughout the southern, central and eastern portions of the state.

Barbula unguiculata Hedw. - BEXAR CO. San Antonio. Found on soil at McAllister Park off of Jones Maltsberger Road. *Galloway T-136*. KLEBERG CO. On sandy soil next to San Fernando Creek on the north-east side of Kingsville. One block S. of King Blvd. on the east side of Hwy 77. *Galloway & Burandt T-77.* Known from south Texas, previously, from Hidalgo County. (Whitehouse E.A. and F. McAllister, 1954).

Bryohaplocladium microphyllum (Hedw.) Wat. & Iwats. - LIVE OAK CO. Along creek in Beldon Hollow where the creek crosses under Hwy 534 at the south end of Lake Corpus Christi (formerly Lake Mathis). *Galloway & Burandt T-57, T-6.* Widespread in eastern and western Texas. Previously reported from south Texas from Cameron and Starr Counties.

Bryum argenteum Brid. - KLEBERG CO. South of Kingsville on the west side of Franklin Adams Rd., on soil. *Burandt B-5.* Wide-spread in Texas.

Desmatodon plinthobius Sull. & Lisq. *in* Sull. - DUVAL CO. San Diego. At base of exterior wall on the N. side of building. Along Hwy 359. *Galloway & Burandt T-67.* Widespread.

Didymodon revolutus (Card.) Williams - BEXAR CO. San Antonio. Growing along the San Antonio River, on soil, in a grassy strip between the sidewalk and the river. Near the Navarro St. Bridge along the Riverwalk. Growing with *B. radiculosum*. *Galloway T-37.* This species, previously known as *Husnotiella revoluta*, has only been reported from two other locations in the state; Cameron County in south Texas and Jeff Davis County in west Texas. Also known from Arizona and New Mexico in the United States.

Ephemerum cohaerens (Hedw.) Hampe - CAMERON CO. Atascosa National Wildlife Refuge. On soil on Tick Hill. *Leal L-3a.* KLEBERG CO. South of Kingsville on soil on the west side of Franklin Adams Rd. *Burandt B-4.* On sandy soil next to San Fernando Creek on the north-east side of Kingsville. One block S of King Blvd. on the east side of Hwy 77. *Galloway & Burandt T-83.* LIVE OAK CO. Along creek in Beldon Hollow where the creek crosss under Hwy 534 at the south end of Lake Corpus Christi (formerly Lake Mathis) *Galloway & Burandt T-49, T-51a.* Reported previously from south Texas on only one occasion, this is a rather inconspicuous moss and may easily be overlooked. These four collections more than double the reports of this species from Texas.

Fissidens bryoides Hedw. - BEXAR CO. San Antonio. On rock at edge of dry stream bed. Just inside entrance to McAllister Park off Jones Maltsberger Rd in the north-east corner of San Antonio. *Galloway T-102.* LIVE OAK CO. South of Lake Corpus Christi (formerly Lake Mathis). Growing on soil at the base of a tree. Partially shaded in a ravine. *Galloway & Burandt T-3.* Rare and scattered in the state.

Fissidens obtusifolius Wils. var. *obtusifolius* - KLEBERG CO. South of Kingsville on west side of Franklin Adams Rd., on soil. *Burandt B-7.* LIVE OAK CO. Along creek in Beldon Hollow where the creek crosses Hwy 534 at the south end of Lake Corpus Christi (formerly Mathis Lake). *Galloway & Burandt T-49a.*

Gymnostomum calcareum Nees & Hornsch. *in* Nees et al. - LIVE OAK CO. South of Lake Corpus Christi (formerly Lake Mathis). Growing on caliche along road side at Pernitas Point. *Galloway & Burandt T-2.* Rare in Texas. Previous reports are limited to two collections in central Texas and one in west Texas.

Lorentziella imbricata (Mitt.) Broth. - KLEBERG CO. South of Kingsville on the west side of Franklin Adams Rd. on soil. *Galloway & Burandt T-10.* Known from two locations in central Texas and from Cameron County in south Texas. This collections serves as a bridge to link two disjunct populations.

Phascum cuspidatum Hedw. - KLEBERG CO. South of Kingsville on west side of Franklin Adams Rd. on soil. *Burandt B-6.* Not known from south Texas, previously.

Sematophyllum adnatum (Michx.) Britt. - LIVE OAK CO. Along creek in Beldon Hollow where the creek crosses under Hwy 534 at the south end of Lake Corpus Christi (formerly Lake Mathis). *Galloway & Burandt T-57a.* Widespread in central and east Texas. Previous to this collection only reported in south Texas from Cameron County.

Splachnobryum obtusum (Brid.) C.Muell. - JIM WELLS CO. Along the Nueces River at the south end of Lake Corpus Christi, behind the Wesley Seale Dam. On limestone rock. *Galloway and Burandt T-75.*

Tortella humilis (Hedw.) Jenn. - BEXAR CO. San Antonio. On a horizontal oak tree trunk approx. 1 meter above ground. McAllister Park off Jones Maltsberger Rd. *Galloway & Galloway T-144.* Widespread in Texas.

Weissia controversa Hedw. - DUVAL CO. Benevides. On soil. *Galloway & Burandy T-65.* KENEDY CO. Kenedy Ranch. La Parra Div. On sandy soil, 100 yards in front of retreat house. *Mendoza & Leal ML-1.* KLEBERG CO. South of Kingsville on soil on the west side of Franklin Adams Rd. *Galloway & Burandt T-11.* On soil at Site 55 (Texas A&I Experiment Station) *Leal-7.* LIVE OAK CO. South of Lake Corpus Christi (formerly Lake Mathis). Growing on soil at the base of a tree. Partially shaded in a ravine (Beldon Hollow). *Galloway & Burandt T-4.* Cosmopolitan.

Weissia jamaicense (Mitt.) Grout - CAMERON CO. Atascosa National Wildlife Refuge. On soil on Tick Hill. *Leal L-3b.* KLEBERG CO. On sandy soil next to San Fernando Creek on the northeast side of Kingsville. One block S. of King Blvd. on the east side of Hwy. 77. *Galloway & Burandt T-83.* LIVE OAK CO. Along creek in Beldon Hollow where the creek crosses Hwy 534 at the south end of Lake Corpus Christi (formerly Mathis Lake). *Galloway & Burandt T-49c.* Previously known in Texas from four collections in central Texas. The collections reported here represent the southernmost range of this moss in Texas and double the known collections reported for the state.

Provisional Record

Micromitrium cf. *wrightii* (C. Mull.) Crosby - LIVE OAK CO. South of Lake Corpus Christi (formerly Lake Mathis). Growing on soil at the base of a tree. Partially shaded in a ravine (Beldon Hollow). *Galloway & Burandt T-7.* Although the specimen is sterile, the species was assigned based on the presence of abundant protonema, lack of a stem, long narrow leaves and long cells. Protonema are generally sparse in species of *Micromitrium*, with the exception of *M. wrightii*. Further collections will be attempted to find this plant in a fertile condition to confirm the species identification but, until the time a fertile specimen is found, the identification can only be tentative.

The authors wish to thank Dr. W.D. Reese for confirmation and/or determination of species identifications.

Literature Cited

Anderson, L.E., H.A. Crum & W.R. Buck. 1990. List of the mosses of North America north of Mexico. The Bryologist, 93: 448-499.

Bartram, E.B. 1927. Texas mosses collected by Mrs. E.A. Harris. The Bryologist, 30: 104-105.

Childs, A.R. 1947. The private journal of Henry William Ravenel. 1859-1887. University of South Carolina Press.

Clover, E.U. 1937. Vegetational survey of the lower Rio Grande Valley, Texas. Madrona 4: 41-66, 77-100.

Crum, H.A. & L.E. Anderson, 1981. Mosses of Eastern North America, Columbia University Press.

Grout, A.J. 1945. Two new species of *Acaulon* from Texas. The Bryologist 48: 25-26.

Mahler, W.F. 1980. The mosses of Texas: A manuel of the flora with sketches. SMU Herbarium 1-147.

Pursell, R.A. & W.D. Reese. 1963. A contribution to the Bryology of Texas. Castanea 28:79-92.

Redfearn, P.L.,JR. 1981. New moss (Bryidae) records for Texas. The Bryologist 84:420-422.

Reese, W.D. 1989. Mosses of the Gulf South from the Rio Grande to the Apalachicola xvi + 252 pp. 58 fig. 2 tab. Louisiana State Univerity Press, Baton Rouge & London.

Whitehouse, E. 1952. Bryology in Texas -1. Mosses (Musci). Field & Laboratory. 20:9-17.

Whitehouse, E. & F. McAllister. 1954. The mosses of Texas. Forward and a catalogue with annotations. The Bryologist 57:53-146.

Table 1. Mosses known from Bexar (B), Cameron (C), Duvall (D), Jim Wells (J), Kenedy (K), Kleberg (Kl), Live Oak (L) and Nueces (N) Counties. x = reported from literature, o = new county record, ● = new state record, ? = provisional record.

Species	B	C	D	J	K	Kl	L	N
Amblystegium varium	x							
Aphanorrhegma serratum		x	o					
Archidium donnellii		x						
Astomum ludovicianum		x						
Astomum muhlenbergianum	o	x						
Astomum phascoides						o		
Barbula indica	o	x					o	
Barbula unguiculata	o					o		
Bryohaplocladium microphyllum		x					o	
Bryum apiculatum		x						
Bryum argenteum		x				o		
Bryum caespiticium		x						
Bryum capillare	x	x						
Bryum radiculosum	●					●		
Desmatodon plinthobius	x		o					
Didymodon revoluta	o	x						
Ephemerum cohaerens		o				o	o	
Ephemerum crassinervium		x						
Erpodium domingense		x						
Fissidens bryoides	o			x			o	
Fissidens fontanus	x							
Fissidens microcladus				x				
Fissidens obtusifolius	x					o	o	
Funaria calvescens		x						
Funaria flavicans	x	x				x		x
Gymnostomum calcareum							o	
Hymenostylium recurvirostre	x							
Leptodictyum riparium	x							
Lorentziella imbricata		x				o		
Micromitrium wrightii							?	
Orthotrichum diaphanum	x							
Phascum cuspidatum						o		
Philonotis fontana	x							
Philonotis gracillima	x							
Physcomitrium pyriforme	x	x				x		
Pleurochaete squarrosa	x							
Pyramidula tetragona		x						
Schistidium apocarpum	x							
Sematophyllum adnatum		x		x			o	
Splachnobryum obtusum		x		o				
Stereophyllum radiculosum	x	x		x			x	
Thelia hirtella	x							
Tortella humilis	o							
Tortula pagorum	x							
Weissia controversa	x		o	x	o	o	o	
Weissia jamaicense		o				o	o	

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A Second Locality for *Rhabdoweisia crenulata* in North America[1]

Lewis E. Anderson[2] & J. Dan Pittillo[3]

Rhabdoweisia crenulata (Mitt.) Jameson was first reported from North America by Zander (1966) who discovered it on a wet ledge in the gorge of Newberry Creek, at 3,300 ft., on the Blue Ridge Escarpment about six miles northwest of Old Fort, McDowell County, North Carolina. It has been collected and observed there several times since, as recently as 1988, and, until now, this was the only known locality on the continent.

In June, 1990, Dan Pittillo sent the senior author a number of collections of mosses from Panthertown Valley, Jackson County, North Carolina for identification. Among these was a small specimen that proved, unmistakably, to be *Rhabdoweisia crenulata*, establishing a second locality in North America, some 50 air miles southwest of the McDowell County site. This paper describes the new locality.

The area known as Panthertown comprises a valley that extends along Panthertown Creek, which originates on the westerly slope of the Blue Ridge Divide. In about 2.5 miles, this creek merges with Greenland Creek, which marks the beginning of the Tuckasegee River, a principal tributary of the Little Tennessee River. The area is thus in the Mississippi River drainage system. In less than a mile beyond the merger of the two creeks the Tuckasegee bends abruptly from its northeasterly course toward the northwest and then bends directly east, creating a bend that is known locally as the "Devil's Elbow." In doing so the river cut through a gap between Shelton Pisgah Mountain and an unnamed peak to the northwest, producing a deep, narrow, gorge, with nearly vertical rock walls. *Rhabdoweisia crenulata* was found on wet rocks of a waterfall of an unnamed creek where it empties into the Tuckasegee River about midway through the "Elbow."

The underlying rock of Panthertown is mapped as quartz diorite or granodiorite (N. C. Geological Survey, 1985). While this is described as igneous rock, extensive banding suggests some modification of this through metamorphism and might better be described as gneisses. At the waterfall where the moss was collected, bands of mica become notable, suggesting grading into micaceous schist. Plants of the moss in Pittillo's specimen have numerous flakes of mica adhering to the lower rhizoids, suggesting the nature of the substrate.

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Because Pittillo was not certain of the precise location of *R. crenulata* at the waterfall site, on July 9, 1992, accompanied by Robert Dellinger, we revisited Devil's Elbow in an attempt to locate its exact site and to estimate its abundance in this section of the gorge. The waterfall is not easily reached. Because of the treacherous nature of the vertical sides of the gorge through most of the Elbow, we were forced to approach the waterfall by entering the gorge about one-half mile down-stream where the walls are steep but wooded and more or less negotiable. We then waded upstream to the falls, exploring both sides of the river. Wading was treacherous. There are almost continuous cascades and rapids interspersed with deep potholes. Partially buried in the river bed are numerous flat-sided rocks of various shapes and sizes that provide very slippery footing. Occasional ledges and overhanging grottoes along the sides of the river support a rich diversity of bryophytes.

As we approached the waterfall we found an abundance of a *Rhabdoweisia* that seemed too large to be ordinary *R. crispata*. At first we thought it might be *R. crenulata*, but all of the material we collected proved to be unusually robust plants of the former species, which is common throughout the gorge. We searched the waterfall itself as well as the adjacent sides of the gorge, but without success. We continued our searches as we waded through the remainder of the Elbow and found no plants of *R. crenulata* on this trip.

On September 7, 1992, however, Pittillo, accompanied by Neil Hetrick, made another trip to Devil's Elbow, determined to relocate *R. crenulata*. Concentrating on the waterfall and intensifying their searches they relocated the moss in a thin crevise of rock behind the cascading water. They made a second confirming collection, which contained a few fruiting plants, not present in Pittillo's earlier collection. A description of the exact location of the moss in the falls was placed in the packet of the second collection. No other localities have been located.

Rhabdoweisia crenulata, which belongs to the Dicranaceae, occurs in Greenland (Godthaab District) and is widely and irregularly distributed in Europe, including Ireland, Great Britain (from North Wales and the Lake District to the Hebrides, according to Smith, 1978), Belgium, France, and Germany. It is apparently absent in Fennoscandia, Russia, including Siberia, and Japan, but is know from Sikkim, China, Formosa, and Maui in the Hawaiian Islands (Crum & Anderson, 1981).

Microscopically, *R. crenulata* is easily distinguished from *R. crispata* by leaves that are broadly oblong-lanceolate, acute to obtuse, and rather coarsely serrate above in contrast to the narrowly lanceolate, sharply acute, irregularly serrate leaves of the latter. The peristome teeth of *R. crenulata*, at least in Appalachian plants, are lightly striolate while those of *R. crispata* are essentially smooth. In the field, however, they are difficult, if not impossible, to distinguish, especially when wet.

The upland slopes of the valley are cut-over hardwoods for the most part. These include varied mixtures of oaks (northern red, white, black, and chestnut), red maple, Fraser magnolia, and hickory. The shrub layer is extensive and frequent thickets of rosebay rhododendron, mountain laurel, blueberries, huckleberries, flame azalea, sweet pepperbush, and the like are encountered.

In the valley floor, hemlocks and white pines dominate, with a tremendously diverse mixture of hardwoods. The steep walls of the gorge through the Devil's Elbow support mainly dwarfed Canada hemlock, tulip poplar, yellow birch, rosebay rhododendron, mountain laurel, and dog hobble. In cracks and ledges spleenworts, northern beech fern, galax, brook saxifrage, and tropical fern gametophytes (*Vittaria*, *Trichomanes*, and *Hymenophyllum*) were observed. Rhododendron and dog hobble thickets occur along the river wherever there is room, and to make penetration even more difficult the ever present smilax is usually interspersed.

Mosses directly associated with *Rhabdoweisia crenulata* in the waterfall include *Amphidium mougeotii*, *Oncophorus raui*, *Platylomella lescurii*, and *Diphyscium cumberlandianum*. On nearby wet rocks in and around the waterfall *Fontinalis dalecarlica*, *Platyhypnidium riparioides*, *Hygrohypnum eugyrium*, *H. micans*, *Atrichum altecristatum*, *Rhizomnium appalachianum*, *Rhabdoweisia crispata*, *Platylomella lescurii*, *Hygroamblystegium tenax*, and *Philonotis fontana* were noted.

Known specimens of *R. crenulata* in North America are cited as follows: **NORTH CAROLINA. MCDOWELL County**: Turf on wet rock ledge, ca. 3300 ft., southwest facing slope of gorge of Newberry Creek, hemlock-hardwood cove forest, ca. 6 miles northwest of Old Fort; Zander 1,723, 20 July 1965; 3,285, July 15, 1967 (BUF, DUKE); Anderson & Zander 19,071, June 16, 1966 (DUKE). **JACKSON County**: Moist rocks of unnamed tributary falls, elevation 3,400 ft., Panthertown, Devil's Elbow of Tuckasegee River; D. Pittillo 10,577, 7 May 1990; 11,148, 7 September 1992 (DUKE, WCUH).

The nomenclature follows Anderson, et al. (1990).

Acknowledgments. We are indebted to Robert Dellinger, and Neil Hedrick for their field assistance. Richard Bruce, Director of the Highlands Biological Station, as always, has been most helpful.

Literature Cited

Anderson, L. E., H. A. Crum, and W. R. Buck. 1990. List of the mosses of North America north of Mexico. *The Bryologist* 93: 448-499.

Crum, H. A. & L. E. Anderson. 1981. *Mosses of Eastern North America.* Columbia University Press. N. Y.

Lawton, E. 1971. A revision of the genus *Rhabdoweisia*. *The Bryologist* 64: 140-156.

North Carolina Geological Survey. 1985. *Geological map of North Carolina*. N. C. Dept. Environment, Health, and Natural Resources. Raleigh.

Smith, A. J. E. 1978. *The Moss Flora of Britain*. Cambridge University Press, Cambridge.

Zander, R. 1966. *Rhabdoweisia crenulata* new to North America. *The Bryologist* 69: 356-358.

_____. 1967. The New World distribution of *Scopelophila* (= *Merceya*). *The Bryologist* 70: 405-413.

Hylocomium brevirostre new to Jamaica

Dana Griffin, III[1] & Walter S. Judd[2]

On a botanical excursion to Jamaica in 1987, the junior author gathered a small collection of bryophytes in the elfin cloud forests of Blue Mountain Peak. Common trees and shrubs of this forest include: *Brunellia comocladiifolia* Humb. & Bonpl., *Clethera alexandri* Griseb., *Dendropanax nutans* (Sw.) Decne. & Planch., *Eugenia alpina* (Sw.) Willd., *Garrya fadyenii* Hook., *Ilex macfadyenii* (Walp.) Rehder, *Ilex obcordata* Sw., *Lobelia martagon* (Grieseb.) Hetchc., *Mecranium purpurascenss* (DC.) Triana, *Miconia rigida* (Sw.) Triana, *Myrica cerifera* L., *Myrsine coriacea* (Sw.) R. Br. ex Roem. & Schult., *Podocarpus urbanii* Pilger, *Vaccinium meridionale* Sw., *Viburnum villosum* Sw., *Wallenia crassifolia* Mez and *Weinmannia pinnata* L.

Among the bryophytes collected is *Hylocomium brevirostre* (Brid.) BSG, a record for the island which represents the first Hylocomiaceae discovered in Jamaica. The plants were found on the ground, growing intermixed in a robust tuft of *Campylopus shawii* Wilson.

Hylocomium belongs to a cool temperate-boreal floristic element that occurs to a limited degree in both the Old and New World tropics, typically at high elevations. In Jamaica this floristic element is represented additionally by such species as *Calliergonella cuspidata* (Brid.) Loeske and *Drepanocladus sendtneri* (Schimp.) Warnst. (Crum & Bartram, 1958).

Reconstructing the migrational history for cool temperate-boreal taxa that resulted in their penetration into tropical latitudes is far from simple. It cannot be presumed *a priori* that they represent Pleistocene "refugees." Crum & Steere (1958), referring to the occurrence of Appalachian taxa in the moss flora of Haiti, mentioned that . . "the continental element (*in the Antilles*) is undoubtedly an extremely ancient one which must be considered in connection with the history of Tertiary plant migrations on the mainland." The paucity of bryophyte fossils from Northern Latin America inhibits a detailed discussion of when any particular suite of high latitude species might have arrived in the tropical zone (nor can one be confident in the exact route by which these species came), but three indirect pieces of evidence may serve to sustain interest in the subject. First, several of the vascular associates of *Hylocomium*, including *Abies, Picea* and *Fagus*, were in Northern Latin America as early as the Miocene (Graham, 1973). Second, the island of Jamaica, as a consequence of plate movements, has migrated eastward from an earlier position much closer to Central

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America (Ross & Scotese, 1988). Lastly, *Hylocomium brevirostre* persists today in the highlands of Guatemala (Bartram, 1949) and has also been found in Costa Rica. Although the Costa Rican records have apparently not been published, duplicates of one collection (*Boza 2012*) were distributed to various herbaria as part of Fascicle III of the Bryophyta Neotropica Exsiccata (S. Rob Gradstein, ed.).

Against this background, it is possible to speculate that *Hylocomium* may have migrated to Jamaica, not from the north, but from the mainland of Mesoamerica, Newer techniques for analyzing chloroplast DNA might clarify whether *Hylocomium* populations in Jamaica show closer affinity with Central American plants or with those occurring in the main body of the range further north.

Specimen examined. JAMAICA. **St. Thomas & Portland Parish boundary**. Blue Mountains. Blue Mountain Peak (Middle Peak & East Peak), ca. 2200-2180 m. alt. Elfin cloud forest, clay soil with rocky outcrops. Terrestrial. *Judd 5409a* (FLAS).

Literature Cited

Bartram, E.B. 1949. Mosses of Guatemala. *Fieldiana*: *Botany* 25: 1-442.

Crum, H.A. & E.B. Bartram. 1958. A survey of the moss flora of Jamaica. *Bull. Inst. Jamaica, Sci. Ser.* 8: 1-90.

Crum, H.A. & W.C. Steere. 1958. A contribution to the bryology of Haiti. *Amer. Midl. Naturalist* 60: 1-51.

Graham, A. 1973. History of the arborescent element in the Northern Latin American biota. *In Vegetation and Vegetational History of Northern Latin America* (ed. A. Graham), pp. 301-314. Elsevier.

Ross, M.I. & C.R. Scotese. 1988. A hierarchical tectonic model of the Gulf of Mexico and Caribbean region. *Tectonophysics* 155: 139-168.

Lichens Collected on the 10th Midwest Bryological and Lichenological Foray on the Keweenaw Peninsula, Michigan.

John W. Thomson[1]

The Foray led by Dr. Janice Glime on September 12 and 13, 1992 brought us into territory worked for lichens in 1947 (Thomson, 1951). While some changes and increased environmental pressure were observable, there was still much to see and appreciate on the trip. The collecting stops were as follows: **PI**: Point Isabelle beach and fen, Keweenaw Co.; **FW**: Fort Wilkins, Lake Superior shore and adjacent forest, Keweenaw Co.; **MF**: Manganese Falls, along the gorge, Keweenaw Co.; **PB**: Perrault Bog, Houghton Co.;**CD**: Cliff Drive near Cliff Mine, Keweenaw Co.; **V**: vicinity of Victoria, Ontonagon Co.

The keys prepared by Harris (1977) for use at the University of Michigan Biological Station were of much help in identifications. Voucher specimens for the 79 species are in WIS.

List of species

Aspicilia caesiocinerea (Nyl. ex Malbr.) Arn. **FW**: On rocks by lighthouse, 24357.

Bacidia rubella (Hoffm.) Mass. **V**: on black ash, 24376, 24378.

Bellemerea cinereorufescens (Ach.) Clauz. & Roux **FW**: accompanying *Rhizocarpon geographicum* on rocks along shore, 24358.

Bryoria capillaris (Ach.) Brodo & Hawksw. **FW**: in deep spruce woods by lake, 24396.

B. furcellata (Fr.) Brodo & Hawksw. **PI**: abundant on white birch, larch, white pine, and black spruce, 24312, 24313, 24335, 24345; **PB**: on larch, 24401.

Buellia punctata (Hoffm.) Massal. **FW**: on black spruce, 24391, on birch, 24393, on balsam fir, 24394; **PB**: on white birch, 24408, on red maple, 24263.

Caloplaca invadens Lynge **FW**: over *Placynthium* lake shore, 34380. **Probably new to Michigan.**

Candelariella vitellina (Ehrh.) Müll. Arg. **FW**: on rocks along shore and up near lighthouse, 24355, 34361.

Cetraria halei Culb. **PI**: on larch, 24314; **PB**: On larch in open, 24402.

C. sepincola (Ehrh.) Ach. **PB**: on dead branch, 24461.

Cladina rangiferina (L.) Nyl. **PI**:common along lake shore 24321, 24322, 24323.

Cladonia bacillaris Nyl. **PI**: on old wood along the lake shore 24325.

C. cenotea (Ach.) Schaerer **PI**: on rotted log along shore, 24318; **MF**: over mosses, 24324.

C. coniocraea (Flörke) Spreng. **PI**: on rotting wood along shore, 24319; **FW**: on rotting log in forest by shore, 24388.

C. cryptochlorophaea Asah. **FW**: on rotting log, 24389.

C. pyxidata (L.) Hoffm. **FW**: On shore rocks, 24390.

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C. uncialis (L.) Web. **MF**: among mosses by stream, 24326.

Evernia mesomorpha Nyl. **PI**: on larch, 24327, on white pine, 24332, on black spruce, 24342, on white birch, 24349; **PB**: on larch in open, 24406.

Graphis scripta (L.) Ach. **PB**: on birch, 24459.

Hypogymnia physodes (L.) Nyl. **PI**: on white pine, 24334; **FW**: roots of spruce, 24362; **PB**: on spruce, 24467, on larch in open, 24404.

H. tubulosa (Schaerer) Havaas **PI**: on white birch, 24352; **PB**: on dead larch, 24468.

Lecanora caesiorubella Ach. **V**: on maple, 24369.

L. carpinea (L.) Ach. **PB**: on white cedar, 24451, 24472; on red maple, 24462.

L. circumborealis Brodo & Vitik. **PI**: dead spruce, 24339; **FW**: balsam fir, 24395; **PB**: larch, 24405.

L. hageni (L.) Ach. **FW**: on black spruce along shore, 24392, 24387; **PB**: on white pine 24450, 24457, on red maple 24464, on white cedar, 24471.

L. hybocarpa (Tuck.) Brodo **PI**: on old stump, and on old lenticels of a old birch stub, 24328, at base of shrub, 14351.

L. muralis (Schreber) Rabenh. **FW**: on rocks along shore, 24382.

L. pallida (Schreber) Rabenh. var. *rubescens* Imsh. & Brodo **PI**: at base of dead spruce, 24340.

L. thysanophora R. Harris ined. **PI**: on white birch lenticels, 24353.

L. wisconsinensis Magn. **PI**: on white pine, 24333.

Lecidea elabens Fr. **PI**: on old stump, 24331.

L. helvola (Th. Fr.) Olivier **FW**: on root at woods edge above rocks, 24346.

Lecidella elaeochroma (Ach.) Haszl. **FW**: On white cedar, 24350.

Lepraria incana (L.) Ach. **CM**: on huge tumbled boulder, 24365.

Leptogium millegranum Sierk **CM**: on side of huge boulder, 24375. **New to Michigan.**

Melanelia subaurifera (Nyl.) Essl. **FW**: on dead spruce, 24386

Micarea prasina (Fr.) Kőrb. **PB**: base of twigs of white pine, 24409.

Mycoblastus sanguinarius (L.) Norm. **PB**: on dead larch, 24470.

Parmelia omphalodes (L.) Ach. **CM**: on face of tumbled boulder, 24371.

P. squarrosa Hale **PB**: on red maple 24455; **CM**: on sugar maple, 24370.

Parmeliopsis aleurites (Ach.) Nyl. em. Lettau **PB**: on larches, 24403, 24469.

P. ambigua (Wulfen in Jacq.) Nyl. **PI**: on dead spruce, 24338, 24341; **PB**: on white pine, 24450, on black spruce, 24474.

Peltigera canina (L.) Willd. **CM**: on huge boulder, 24373.

P. elisabethae Gyel. **MF**: 24352.

P. leucophlebia (Nyl.) Gyel. **MF**: over mosses, 24317.

Pertusaria amara (Ach.) Nyl. **FW**: On white cedar, 24351; **PB**: red maple, 24454; birch, 24460.

P. consocians Dibben **FW**: On white cedar on point, 24349.

P. ophthalmiza (Nyl.) Nyl. **PB**: on red maple, 24453, 24465; **V**: on maple 24368.

P. sommerfeltii (Flőrke ex Somm.) Fr. **V**: on black ash, 24377.

P. trachythallina Erichs. **PB**: on white birch, 24407.

Phaeophyscia hispidula (Ach.) Essl. **PB**: on red maple, 24466.

Physcia adscendens (Fr.) Olivier **FW**: on fallen aspen, 24347.

P. aipolia (Hoffm.) Hampe **FW**: on fallen aspen, 24347a.

Physconia detersa (Nyl.) Poelt **V**: on maple 24367, on ironwood, 24363.

Platismatia tuckermanii (Oakes) Culb. & C. Culb. **PI**: dead spruce, 24344; **PB**: on larch, 24458.

Porpidia albocaerulescens (Wulfen) Hertel & Knoph **CM**: on huge tumbled boulder, 24364.

P. crustulata (Ach.) Hertel & Knoph **PI**: on rocks at lake edge, 24350.

P. speirea (Ach.) Krempelh. **FW**: on rocks along the shore, 24384.

P. superba Gowan **FW**: on shaded side of rocks along shore above water, 24385.

Punctelia rudecta (Ach.) Krog **PB**: on white cedar, 24450, 24473. **V**: on ironwood bark 24399.

Pyrenopsis cf. *fuscoatra* Fink **FW**: on conglomerate rock in splash zone by the lighthouse, 24360. **Probably new to Michigan.**

Ramalina americana Hale **CM**: on maple, 24379; **V**: on ash, 24372.

R. pollinaria (Westr.) Ach. **CM**: on a huge boulder, 24374. Rare, previously known in Michigan from Isle Royale (Hedrick & Lowe 1936).

Rhizocarpon geographicum (L.) DC. **FW**: on rocks on point by lighthouse 24358. Accompanied by *Bellemerea cinereorufescens*.

R. grande (Flörke) Arn. **FW**: on conglomerate rock at the lighthouse, 24354.

R. riparium Räsänen (*R. lindsayanum*) On tailings of Delaware Mine, collected by Nadine Plante. Has been collected on Isle Royale by Wetmore (Wetmore 1983).

Staurothele drummondii (Tuck.) Tuck. **FW**: on rocks along shore by lighthouse 24353, 24383.

Stereocaulon saxatile Magn. **FW**: on rocks by lighthouse, 24348. Previously reported by Wetmore (1983) from Isle Royale.

Tuckermannopsis pinastri (Scop.) Hale **PI**: on leatherleaf, 24337; **PB**: on alder, 24471.

Usnea cavernosa Tuck. **FW**: in deep spruce woods by lake, 24398.

U. comosa (Ach.) Röhl. **PI**: on larch, s.n.; **FW**:on spruce, 24397.

U. hirta (L.) Wigg. **PI**: on larch, 24330, on white pine, 24336, on spruce, 24343; **PB**: on larch in open, 24400.

U. subfloridana Stirt. **PI**; on white birch, 24311.

Verrucaria aethiobola Wahl. **FW**: along trail from lighthouse to shore, 24381.

Xanthoparmelia angustiphylla (Gyel.) Hale **FW**: On rocks by the lighthouse, 24356, 24359.

Xanthoria elegans (Link.) Th. Fr. **FW**: upper part of splash zone by lighthouse, 24316.

X. fallax (Hepp) Arn. **V**: on ironwood, 24336.

X. polycarpa (Hoffm.) Rieber **FW**: on fallen aspen, 24347b.

X. sorediata (Vainio) Poelt **FW**: in upper part of splash zone near lighthouse, 24315.

Literature cited

Harris, R. C. 1977. *Lichens of the Straits Counties, Michigan*. 1- 152. Published by the author (Process publication).

Hedrick, J. & J. L. Lowe 1936. Lichens of Isle Royale, Lake Superior. *The Bryologist* 39: 73-91.

Thomson, J. W. 1951. Some lichens from the Keweenaw Peninsula, Michigan. *The Bryologist* 54: 17-53.

Wetmore, C. M. 1983. Lichens of Isle Royale National Park. In process report to National Park Service entitled *"Lichens of the Air Quality Class I, National Parks"*. pages 58-71.

Mosses from the State of Maine - VI.

Bruce Allen[1]

Six mosses, *Bryum ambylodon*, *Calliergon richardsonii*, *Grimmia hartmanii*, *G. hermanii*, *Hygrohypnum subeugyrium*, and *Orthotrichum pusillum* are reported for the first time from the state of Maine. Previous reports of *Brynia graminicolor* from Cumberland county, *Bryum muehlenbeckii* from Knox county, *Bryum cirrhatum* from Oxford county, *Climacium americanum* from Hancock county, all reports of *Dicranum groenlandicum* and *Trematodon longicollis* from Oxford county are based on misdetermined specimens.

Many of the collections reported below were obtained on loan from the University of Maine Herbarium (MAINE). This herbarium, though small, has many historical Maine moss collections made by Elmer Drew Merrill, John C. Parlin, Rachel Lowe and Elizabeth Dunham or reported by Parlin (1939) in his work on Maine mosses. The collection is being systematically loaned (one or two families at a time) to me for examination and annotation.

Unless otherwise noted all collections cited are deposited at MO. The localities for collections made by B. Allen, which are cited in the list only by collection number, are given below.

Allen 10059-10120: Porter Township, along north bank of Ossipee River, between Porter and Kezar Falls.
Allen 10121-10179: Pittston Township, along Tongus Stream ca 1.5 mi E of Randolph.
Allen 10180-10206: Woolwich Township, Nequasset Brook ca 2.5 mi NW of Montsweag.
Allen 10207-10211: Southport Township, Squirrel Island.
Allen 10212-10314: Avon & Weld Townships, Mt. Blue, ca 4 mi NE of Weld.
Allen 10315-10390: Lincolnville Township, Bald Rock Mountain, ca 2 mi SE of Lincolnville.
Allen 10391-10400: Boothbay Harbor Township, ca 1.5 mi SE of Boothbay Harbor.
Allen 10401-10409: Manchester Township, Cobboseecontee Stream, ca 3.5 mi SSW of Manchester.
Allen 13032-13062: York Township, Mount Agamenticus, ca 5 mi E of South Berwick.
Allen 13064-13086: Bremen Township, along stream connecting Pemaquid and Biscay Ponds, ca 3.5 mi ESE of Damariscotta.

AMBLYSTEGIACEAE

Amblystegium varium (Hedw.) Lindb. - **Kennebec**: 10155A.
Calliergon cordifolium (Hedw.) Kindb. - **Kennebec**: 10147.
C. richardsonii (Mitt.) Kindb. in Warnst. - **Aroostook**: Williams, Collins & Fernald 2729. [Mosses N. Amer. #96]

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Campylium chrysophyllum (Brid.) J. Lange - **Franklin**: 10253; **Penobscot**: Duncan; **Waldo**: 10318.

C. hispidulum (Brid.) Mitt. - **York**: 13055B.

C. stellatum (Hedw.) C. Jens. - **Waldo**: Redfearn 37784.

Drepanocladus aduncus (Hedw.) Warnst. - **Cumberland**: Wilson.

Hygroamblystegium fluviatile (Hedw.) Loeske - **Kennebec**: 10124.

H. tenax (Hedw.) Jenn. - **Oxford**: 10082; **Waldo**: 10341.

Hygrohypnum eugyrium (Schimp. in B.S.G.) Loeske - **Franklin**: 10314.

H. molle (Hedw.) Loeske - **Franklin**: 10301A.

H. ochraceum (Turn. ex Wils.) Loeske - **Franklin**: 10311; **Piscataquis**: Hermann 19234.

H. subeugyrium (Ren. & Card.) Broth. - **Franklin**: 10225, 10259.

Platylomella lescurii (Sull. in Gray) Andrews - **Penobscot**: Merrill 99.

Sanionia uncinata (Hedw.) Loeske - **Kennebec**: 10151; **Penobscot**: Merrill 81; **Waldo**: Redfearn 37790.

Warnstorfia fluitans (Hedw.) Loeske - **Sagadahoc**: 10182.

ANDREAEACEAE

Andreaea rothii Web. & Mohr - **Hancock**: Merrill (MAINE).

A. rupestris Hedw. - **Androscoggin**: Parlin 11466 (MAINE); **Cumberland**: Blake (MAINE); **Franklin**: 10239; **Knox**: Crockett; **Oxford**: Parlin 11721 (MAINE); **Piscataquis**: Richard & Cooper 97 (MAINE); **Waldo**: 10336; **York**: 13043.

ANOMODONTACEAE

Anomodon attenuatus (Hedw.) Hüb. - **Kennebec**: 10157; **Oxford**: 10111; **Waldo**: 10378.

A. minor (Hedw.) Fürnr. - **Oxford**: 10097.

AULACOMNIACEAE

Aulacomnium androgynum (Hedw.) Schwaegr. - **Hancock**: Redfearn 37734.

A. palustre (Hedw.) Schwaegr. - **Penobscot**: Merrill 111; **Sagadahoc**: 10187; **Washington**: Duncan.

BARTRAMIACEAE

Bartramia pomiformis Hedw. - **Androscoggin**: Merrill 45a.

Philonotis fontana (Hedw.) Brid. - **Franklin**: 10243.

BRACHYTHECIACEAE

Brachythecium calcareum Kindb. - **Kennebec**: 10163.

B. campestre (C. Müll.) Schimp. in B.S.G. - **Kennebec**: 10129; **York**: 13048.

B. oxycladon (Brid.) Jaeg. - **Androscoggin**: Merrill 102.

B. plumosum (Hedw.) Schimp. in B.S.G. - **Kennebec**: 10403; **Sagadahoc**: 10205; **Waldo**: 10344.

B. populeum (Hedw.) Schimp. in B.S.G. - **Waldo**: 10375.

B. reflexum (Starke in Web. & Mohr) Schimp in B.S.G. - **Franklin**: 10219; **Kennebec**: Redfearn 37806; **Oxford**: 10114; **Waldo**: 10323.

B. rivulare Schimp. in B.S.G. - **Franklin**: 10268; **Oxford**: 10085.

B. rutabulum (Hedw.) Schimp. in B.S.G. - **Franklin**: 10313; **Kennebec**: 10134.

B. salebrosum (Web. & Mohr) Schimp. in B.S.G. - **Franklin**: 10217; **Oxford**: 10088.

B. velutinum (Hedw.) Schimp. in B.S.G. - **Cumberland**: 6006 (misidentified as *Bryhnia graminicolor*, Allen 1987) **Waldo**: 10360.

Bryhnia novae-angliae (Sull. & Lesq. in Sull.) Grout - **Franklin**: 10309; **Kennebec**: 10149; **Lincoln**: 13065; **York**: Redfearn 37834.

Eurhynchium pulchellum (Hedw.) Jenn. - **Waldo**: 10363.

Platyhypnidium riparioides (Hedw.) Dix. - **Franklin**: 10247.

Steerecleus serrulatus (Hedw.) Robins. - **Hancock**: Redfearn 31127; **Kennebec**: Redfearn 37809b; **York**: 13033B.

BRYACEAE

B. ambylodon C. Müll. - **Lincoln**: 10207.

Bryum argenteum Hedw. - **Lincoln**: 10211; **York**: 13047.

B. caespiticium Hedw. - **York**: Blake p.p. (MAINE filed with *Pleuridium subulatum*).

B. capillare Hedw. - **Oxford**: 10064; **Washington**: McCleary 16608.

B. pallescens Schleich. ex Schwaegr. - **Oxford**: Parlin 11697 (NY). Misidentified as *Bryum cirrhatum* (Parlin 1939) this species is deleted from Maine flora.

B. pseudotriquetrum (Hedw.) Gaertn. et al. - **Penobscot**: Merrill 125.

Pohlia annotina (Hedw.) Lindb. - **Oxford**: 10069.

P. cruda (Hedw.) Lindb. - **Kennebec**: 10150.

P. nutans (Hedw.) Lindb. - **Kennebec**: 10123; **Knox**: 6052B, 6076 (misidentified as *Bryum muehlenbeckii*, Allen 1987); **Oxford**: 10061; **Sagadahoc**: 10198; **Waldo**: 10327; **York**: 13062.

Rhodobryum ontariense (Kindb.) Par. in Kindb. - **Penobscot**: Merrill 119.

BUXBAUMIACEAE

Buxbaumia aphylla Hedw. - **Kennebec**: 10132.

Diphyscium foliosum (Hedw.) Mohr - **Franklin**: 10266; **Kennebec**: 10126; **Waldo**: 10348.

CLIMACIACEAE

Climacium americanum Brid. - **Kennebec**: 10408. This species was also reported by Rand & Redfield (1894) from Hancock county but a Rand specimen in MO named as such is C. dendroides. This Hancock county record is deleted from the list pending verification of the species in the county.

C. dendroides (Hedw.) Web. & Mohr - **Franklin**: 10314B; **Penobscot**: Merrill 118.

DICRANACEAE

Arctoa fulvella (Dicks.) Bruch & Schimp. in B.S.G. - **Piscataquis**: Lowe (MAINE).

Cynodontium alpestre (Wahlendb.) Milde - **Washington**: Norton (MAINE).

C. strumiferum C. Müll. & Kindb. in Mac. & Kindb. - **Piscataquis**: Lowe (MAINE).

Dichodontium pellucidum (Hedw.) Schimp. - **Oxford**: Parlin 14006 (MAINE).

Dicranella cerviculata (Hedw.) Schimp. - **Piscataquis**: Merrill 135 (MAINE, MO).

D. heteromalla (Hedw.) Schimp. - **Franklin**: 10238; **Kennebec**: 10125; **Oxford**: J.A. Allen (MAINE): **Penobscot**: Crane (MAINE); **Piscataquis**: Merrill 10 (MAINE, MO).

D. rufescens (With.) Schimp. - **Piscataquis**: Dunham (MAINE).

Dicranodontium denudatum (Brid.) Britt. in Williams - **Piscataquis**: Hodgkins (MAINE).

Dicranum elongatum Schleich. ex Schwaegr. - **Aroostook**: Lowe (MAINE).

D. flagellare Hedw. - **Piscataquis**: Richards & Cooper 87 (MAINE); **Penobscot**: Duncan; **York**: Blake (MAINE).

D. fulvum Hook. - **Cumberland**: Lowe (MAINE); **Franklin**: Richards (MAINE); **Kennebec**: 10170; **Oxford**: 10079; **Piscataquis**: Richards & Cooper 43 (MAINE); **Waldo**: 10368.

D. fuscescens Turn. - **Franklin**: 10246; **Oxford**: Richards 6017 (MAINE); **Piscataquis**: Lowe (MAINE).

* *D. groenlandicum* - removed from list = *D. elongatum*

D. majus Sm. - **Hancock**: sin. coll. (MAINE) **Washington**: Lowe (MAINE).

D. montanum Hedw. - **Aroostook**: Thomas (MAINE); **Franklin**: 10212; **Kennebec**: 10130; **Piscataquis**: Lowe (MAINE); **Waldo**: 10346; **Washington**: Redfearn 37707b.

D. ontariense Peters. - **Aroostook**: Sorenson 135 (MAINE); **Hancock**: Norton (MAINE); **Piscataquis**: Lowe (MAINE); **Sagadahoc**: Lowe (MAINE); **York**: Lowe (MAINE).

D. polysetum Sw. - **Franklin**: 10294; **Piscataquis**: Richards & Cooper 94A (MAINE); **Washington**: Redfearn 37704.

D. scoparium Hedw. - **Androscoggin**: Merrill 18 (MAINE); **Franklin**: 10248; **Kennebec**: Ramsdell 13952 (MAINE); **Oxford**: Parlin 9291 (MAINE); **Penobscot**: Ogden 2356 (MAINE); **Piscataquis**: Merrill 167.

D. spurium Hedw. - **Kennebec**: Lowe (MAINE).

D. undulatum Brid. - **Aroostook**: Lowe (MAINE); **Franklin**: Adams 14669 (MAINE); **Kennebec**: Lowe (MAINE); **Oxford**: Adams 13165 (MAINE); **Sagadahoc**: Lowe (MAINE).

D. viride (Sull. & Lesq. in Sull.) Lindb. - **Franklin**: 10270C.

Kiaeria blyttii (Schimp.) Broth. - **Piscataquis**: Norton (MAINE).

Oncophorus wahlenbergii Brid. - **Aroostook**: Lowe (MAINE); **Cumberland**: Norton 2863 (MAINE); **Kennebec**: 10169; **Oxford**: Lowe (MAINE); **Penobscot**: Adams (MAINE); **Sagadahoc**: Norton (MAINE); **Washington**: Davis 149 (MAINE).

Paraleucobryum longifolium (Hedw.) Loeske - **Franklin**: 10228; **Oxford**: Adams (MAINE); **Waldo**: 10351.

Rhabdoweisia crispata (With.) Lindb. - **Oxford**: J.A. Allen (MAINE).

Trematodon ambiguus (Hedw.) Hornsch. - **Aroostook**: Norton (MAINE); **Cumberland**: Chamberlain 902 (MAINE); **Oxford**: Parlin 12857 (MAINE). Parlin's (1939) report of *T. longicollis* was based in part on the above specimen from Oxford county. Until verified, the occurrence of *T. longicollis* in Maine should be considered doubtful. **Piscataquis**: Lowe (MAINE); **Sagadahoc**: Norton (MAINE); **York**: Carlson & Lowe (MAINE).

DITRICHACEAE

Ceratodon purpureus (Hedw.) Brid. - **Aroostook**: Norton (MAINE); **Cumberland**: Norton 2871 (MAINE); **Franklin**: 10271; **Hancock**: Norton (MAINE); **Kennebec**: 10131; **Oxford**: 10063; **Sagadahoc**: 10180; **Waldo**: 10362; **Washington**: Norton (MAINE); **York**: 13040.

Ditrichum lineare (Sw.) Lindb. - **Cumberland**: Norton & Kendall (MAINE); **Franklin**: 10242; **Oxford**: Parlin 14163 (MAINE); **Piscataquis**: Merrill 140 (MAINE).

D. pallidum (Hedw.) Hampe - **Cumberland**: Lowe (MAINE); **Oxford**: Parlin 12909 (MAINE); **Penobscot**: Sturgis 13229 (MAINE); **York**: Lowe (MAINE).

D. pusillum (Hedw.) Hampe - **Aroostook**: Blake (MAINE); **Cumberland**: Niles (MAINE); **Franklin**: 10280; **Oxford**: Poole 13234 (MAINE); **Penobscot**: Merrill 128.

Pleuridium subulatum (Hedw.) Rabenh. - **Cumberland**: Lowe (MAINE); **York**: Blake p.p. (MAINE).

Saelania glaucescens (Hedw.) Broth. in Bomanss. & Broth. - **Franklin**: Adams 13811

(MAINE); **Kennebec**: Lowe (MAINE); **Oxford**: Adams 13821 (MAINE);

ENCALYPTACEAE

Encalypta ciliata Hedw. - **Androscoggin**: Merrill (MAINE); **Oxford**: Parlin (MAINE); **York**: Lowe (MAINE).

ENTODONTACEAE

Entodon seductrix (Hedw.) C. Müll. - **Washington**: McCleary.

FISSIDENTACEAE

Fissidens adianthoides Hedw. - **Aroostook**: Lowe (MAINE); **Cumberland**: Blake (MAINE); **Franklin**: Brown (MAINE); **Kennebec**: Lowe (MAINE); **Oxford**: Lowe (MAINE); **Piscataquis**: Porter (NY); **Sagadahoc**: Norton & Nichols (MAINE).

F. bryoides Hedw. - **Cumberland**: Allen 6000; **Kennebec**: Merrill (MAINE); **Oxford**: Parlin 14054 (MAINE).

F. bushii (Card. & Thér.) Card. & Thér. - **Oxford**: Adams (MAINE).

F. dubius P. Beauv. - **Cumberland**: Lowe (MAINE); **Franklin**: Lowe (MAINE); **Knox**: Crockett 5034 (NY); **Oxford**: Bacon (MAINE); **Piscataquis**: Merrill 172 (MAINE); **Waldo**: Redfearn 37775.

F. osmundioides Hedw. - **Androscoggin**: Lowe (MAINE); **Aroostook**: Niles (MAINE); **Cumberland**: Haring (NY); **Lincoln**: 13078; **Oxford**: 10104; **Penobscot**: Adams (MAINE).

FONTINALACEAE

Dichelyma capillaceum (With.) Myr. - **Oxford**: 10059.

D. pallescens Schimp. in B.S.G. - **Oxford**: 10101; **Penobscot**: Merrill 117.

Fontinalis antipyretica Hedw. - **Piscataquis**: Norton (NHA).

F. dalecarlica Schimp. in B.S.G. - **Oxford**: 10086; **Sagadahoc**: 10200.

F. gigantea Sull. - **Franklin**: 10299.

F. hypnoides Hartm. - **Kennebec**: 10401.

F. novae-angliae Sull. - **Oxford**: 10060.

F. sullivantii Lindb. - **Oxford**: 10100.

GRIMMIACEAE

Grimmia hartmanii Schimp. - **Oxford**: Lowe (MAINE).

G. hermanii Crum - **Waldo**: 10358.

G. olneyi Sull. - **Androscoggin**: Parlin 11293 (MAINE); **Sagadahoc**: Lowe (MAINE).

Racomitrium aciculare (Hedw.) Brid. - **Franklin**: 10230; **Waldo**: 10376.

R. lanuginosum (Hedw.) Brid. - **Hancock**: Rand; **Piscataquis**: Merrill.

R. microcarpon (Hedw.) Brid. - **Hancock**: Redfearn 37757; **Piscataquis**: MacFadden 6020.

R. sudeticum (Funck) Bruch. & Schimp. in B.S.G. - **Piscataquis**: Merrill 33; **Sagadahoc**: Lowe (MAINE).

R. venustum Frisv. - **Hancock**: Merrill 95; **Waldo**: 10320.

Schistidium agassizii Sull. & Lesq. in Sull. - **Androscoggin**: Parlin 11309 (MAINE); **Oxford**: 10066; **Penobscot**: Merrill 29 (MAINE); **York**: Norton & Whelden (MAINE).

S. apocarpum (Hedw.) Bruch & Schimp. in B.S.G. - **Androscoggin**: Lowe (MAINE); **Cumberland**: Norton (MAINE); **Franklin**: 10249; **Hancock**: Redfearn 37731; **Oxford**: Parlin 9904 (MAINE); **Sagadahoc**: 10193; **York**: Lowe (MAINE).

S. maritimum (Turn.) Bruch & Schimp. in B.S.G. - **Lincoln**: 10209.

S. rivulare (Brid.) Podp. - **Aroostook**: Norton (MAINE); **Franklin**: 10237; **Kennebec**: 10128; **Oxford**: J.A. Allen (MAINE); **Sagadahoc**: 10206; **Washington**: Lowe (MAINE); **York**: 13053.

HEDWIGIACEAE

Hedwigia ciliata (Hedw.) P. Beauv. - **Kennebec**: Redfearn 37810; **Oxford**: 10107; **Penobscot**: Merrill 39; **Sagadahoc**: 10194; **Waldo**: 10349.

HYLOCOMIACEAE

Hylocomium splendens (Hedw.) Schimp. in B.S.G. - **Hancock**: Redfearn 37738; **Kennebec**: 10176; **Waldo**: Redfearn 37786.

Pleurozium schreberi (Brid.) Mitt. - **Franklin**: 10213; **Kennebec**: 10167.

Rhytidiadelphus squarrosus (Hedw.) Warnst. - **Kennebec**: 10175.

HYPNACEAE

Callicladium haldanianum (Grev.) Crum - **Franklin**: 10235; **Kennebec**: 10165; **Penobscot**: Ogden 2358; **Washington**: Redfearn 37702.

Herzogiella striatella (Brid.) Iwats. - **Kennebec**: 10161; **Waldo**: 10364.

H. turfacea (Lindb.) Iwats. - **Washington**: Davis 144.

Homomallium adnatum (Hedw.) Broth. - **Kennebec**: Redfearn 37803; **York**: Redfearn 37825.

Hypnum cupressiforme Hedw. - **Waldo**: 10366; **York**: 13041.

H. curvifolium Hedw. - **Waldo**: 10386.

H. fertile Sendtn. - **York**: 13051.

H. imponens Hedw. - **Hancock**: Davis 331.

H. lindbergii Mitt. - **Kennebec**: 10178; **Sagadahoc**: 10199.

H. pallescens (Hedw.) P. Beauv. - **Franklin**: 10236; **Hancock**: Davis 273; **Kennebec**: 10152.

H. pratense (Rabenh.) W. Koch ex Spruce - **Kennebec**: 10173.

Platydictya subtilis (Hedw.) Crum - **Franklin**: 10312.

Platygyrium repens (Brid.) Schimp. in B.S.G. - **Franklin**: 10272; **Kennebec**: 10166; **Washington**: Redfearn 37700; **York**: 13034.

Pseudotaxiphyllum elegans (Brid.) Iwats. - **Oxford**: 10078; **Waldo**: 10347; **York**: 13042.

Ptilium crista-castrensis (Hedw.) De Not. - **Kennebec**: Redfearn 37802; **Penobscot**: Merrill; **Waldo**: 10370.

Pylaisiella intricata (Hedw.) Grout - **Franklin**: 10264B.

P. polyantha (Hedw.) Grout - **Oxford**: Adams.

P. selwynii (Kindb.) Crum et al. - **Franklin**: 10256; **Kennebec**: 10145.

LESKEACEAE

Leskea gracilescens Hedw. - **Lincoln**: 13075.

L. polycarpa Hedw. - **Oxford**: 10102.

Leskella nervosa (Brid.) Loeske - **Franklin**: 10283.

Lindbergia brachyptera (Mitt.) Kindb. - **Kennebec**: 10178.

LEUCOBRYACEAE

Leucobryum glaucum (Hedw.) Ångstr - **Cumberland**: Norton 2835 (MAINE); **Franklin**: 10300; **Hancock**: Rand (MAINE); **Kennebec**: 10121; **York**: 13059.

LEUCODONTACEAE

Leucodon brachypus Brid. var. *andrewsianus* Crum & Anderson - **Franklin**: 10229; **Waldo**: 10316; **York**: 13036.

MNIACEAE

Mnium hornum Hedw. - **Kennebec**: 10141; **Oxford**: 10096; **Sagadahoc**: 10197; **Washington**: Redfearn 37703.

Plagiomnium ciliare (C. Müll.) T. Kop. - **Franklin**: 10273.

P. cuspidatum (Hedw.) T. Kop. - **Lincoln**: 10391; **Waldo**: 10358.

P. drummondii (Bruch & Schimp.) T. Kop. - **Waldo**: Redfearn 37762.

P. ellipticum (Brid.) T. Kop. - **Aroostook**: Seymour.

Rhizomnium magnifolium (Horik.) T. Kop. - **Franklin**: 10254.

R. punctatum (Hedw.) T. Kop. - **Franklin**: 10221; **Kennebec**: 10153.

NECKERACEAE

Homalia trichomanoides (Hedw.) Schimp. in B.S.G. - **Franklin**: 10279.

Thamnobryum alleghaniense (C. Müll.) Nieuwl. - **Waldo**: 10351.

ORTHOTRICHACEAE

Drummondia prorepens (Hedw.) Britt. - **Waldo**: 10325.

Orthotrichum obtusifolium Brid. - **Kennebec**: 10138A.

O. ohioense Sull. & Lesq. in Aust. - **Franklin**: 10305.

O. pusillum Mitt. - **Kennebec**: 10156A.

O. sordidum Sull. & Lesq. in Aust. - **Franklin**: 10223; **Waldo**: 10322.

O. stellatum Brid. - **York**: 13037.

Ulota coarctata (P. Beauv.) Hammar - **Kennebec**: 10171; **Waldo**: 10332.

U. crispa (Hedw.) Brid. - **Franklin**: 10278; **Kennebec**: 10172; **Oxford**: 10115; **York**: 13050.

U. hutchinsiae (Sm.) Hammar - **Waldo**: 10369; **York**: 13060.

PLAGIOTHECIACEAE

Plagiothecium denticulatum (Hedw.) Schimp. in B.S.G. - **Franklin**: 10263; **Piscataquis**: Crane 563.

P. laetum Schimp. in B.S.G. - **Cumberland**: Davis 198; **Franklin**: 10214; **Kennebec**: 10140; **Waldo**: 10387; **York**: 13054.

POLYTRICHACEAE

Atrichum angustatum (Brid.) Bruch & Schimp. in B.S.G. - **Oxford**: 10119.

A. crispum (James) Sull. - **Oxford**: 10110.

A. oersteadianum (C. Müll.) Mitt. - **Franklin**: 10227; **Kennebec**: 10135; **Lincoln**: 10395; **Oxford**: 10076; **Sagadahoc**: 10196; **York**: Redfearn 37823.

Pogonatum dentatum (Brid.) Brid. - **Franklin**: 10276.

Polytrichastrum alpinum (Hedw.) G.L. Sm. - **Franklin**: 10274B; **Waldo**: 10342.

Polytrichum commune Hedw. - **Hancock**: Morse; **Kennebec**: Merrill 68; **Waldo**: 10361; **Washington**: McCleary; **York**: Redfearn 31140b.

P. juniperinum Hedw. - **Franklin**: 10284; **Hancock**: Morse; **York**: Redfearn 37829.

P. pallidisetum Funck - **Franklin**: 10255; **Kennebec**: Merrill 60; **York**: 13056A.

P. piliferum Hedw. - **Franklin**: 10296; **Piscataquis**: Richards & Cooper 509; **Waldo**: 10331.

P. strictum Brid. - **Cumberland**: s.coll. (NHA); **Piscataquis**: Norton & Fanning (NHA).

POTTIACEAE

Gymnostomum aeruginosum Sm. - **Oxford**: Parlin 13599 (MAINE).

Hymenostylium recurvirostre (Hedw.) Dix. - **Oxford**: Adams 13612 (MAINE).

Oxystegus tenuirostre (Hook. & Tayl.) A.J.E. Sm. - **Oxford**: Parlin 13657 (MAINE); **York**: 13055A.

Pottia truncata (Hedw.) Fürnr. ex B.S.G. - **Cumberland**: Lowe (MAINE).

Tortella fragilis (Hook. & Wils. in Drumm.) Limpr. - **Somerset**: Bromer (MAINE).

T. tortusoa (Hedw.) Limpr. - **Aroostook**: Lowe (MAINE); **Franklin**: 10220; **Kennebec**: Norton (MAINE); **Oxford**: Parlin (MAINE).

Weissia controversa Hedw. - **Penobscot**: Norton & Fanning (MAINE).

PTERIGYANDRACEAE

Heterocladium dimorphum (Brid.) Schimp. in B.S.G. - **Franklin**: 10274A.

Pterigyandrum filiforme Hedw. - **Franklin**: 10258.

SELIGERIACEAE

Blindia acuta (Hedw.) Bruch & Schimp. in B.S.G. - **Oxford**: Parlin 11695 (MAINE).

SEMATOPHYLLACEAE

Brotherella recurvans (Michx.) Fleisch. - **Androscoggin**: Merrill 77; **Franklin**: 10265; **Oxford**: Dunham; **Penobscot**: Merrill 77a; **Waldo**: 10389.

SPHAGNACEAE

Sphagnum capillifolium (Ehrh.) Hedw. - **York**: Redfearn 37836.

S. fuscum (Schimp.) Klinggr. - **Sagadahoc**: 10181.

TETRAPHIDACEAE

Tetraphis pellucida Hedw. - **Franklin**: 10218; **Oxford**: 10080; **Washington**: Redfearn 37694.

THELIACEAE

Thelia hirtella (Hedw.) Sull. in Sull. & Lesq. - **York**: 13049.

THUIDIACEAE

Thuidium delicatulum (Hedw.) Schimp. in B.S.G. - **Aroostook**: Seymour.

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Literature Cited.

Parlin, J. C. 1939. Some Maine lichens, hepatics and mosses. *Bulletin of the Josselyn Botanical Society Maine* 7: 30-59.

Rand, E. L. & J. H. Redfield. 1894. *Flora of Mount Desert Island, Maine. A preliminary catalogue of the plants growing on Mount Desert and the adjacent islands.* Cambridge University Press. London. 286 pp.

Improved Spot Tests for *Bryoria*

Bruce McCune[1] & Roger Rosentreter[2]

The Problem. The diversity of lichen substances present in *Bryoria* would normally be a great aid in identification of species. Spot tests in *Bryoria*, however, often lead to more confusion rather than less, even if the tests are done on a piece of paper as suggested by Brodo & Hawksworth (1977).

Out of curiosity, we tried applications of the normal reagents to the acetone-extracted residue used to prepare thin-layer chromatography plates. We found very strong color reactions, which led us to further experimentation and the technique described below.

The difficulty with spot tests in *Bryoria* results from their dark brown pigments. These pigments mask or interfere with the K, C, and KC reactions. The PD test is normally not a problem. The K, C, and KC spot tests can be improved by separating the brown pigments from the lichen substances, then performing the test on the lichen substances alone. Because the brown pigments are insoluble in acetone, it is very simple to do this separation.

The Solution

1. Clip or break a small group of fibers from a *Bryoria* specimen. Because *Bryoria* species often grow intermixed, extra care is needed to get only one species.

2. Place the fibers in a depression in a white porcelain spot plate. We used spot plates with 12 depressions for mass testing of a series of specimens. White spot plates are much better than clear glass spot plates for showing the colors. Porcelain plates are inexpensive, currently less than $10 for a package of several plates.

3. Add enough acetone to thoroughly saturate the sample (about 5 drops is normally sufficient).

4. Allow the acetone to evaporate completely. (This step is speeded up if the extraction is done on a slide-warming table. Be careful if you improvise: acetone is highly flammable.)

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5. Blow the fibers out of the depressions or remove with a probe or forceps, leaving only the acetone extract (this will be difficult to see on the white plate).

6. Add two drops of K, observing any color change. It is best to run the drops down the sides of the depression, because much of the extract is deposited on the sides of the depression.

7. After about two minutes (to allow the complete K reaction), dribble a drop of C (liquid chlorine bleach) down the other side of the depression, observing any color change. Like most C reactions, the color quickly fades, so you must record the color within seconds after applying the reagent. The C reaction is observed on the side of the depression and is bright red. The KC reaction is observed where the C and K reagents have merged.

Results

Table 1 illustrates the reactions of several common species and their contents. Reactions for PD are not given below, because this test is usually not problematic with *Bryoria*.

Table 1. Examples of spot test results in *Bryoria* using acetone extracts.

species	K	KC	C	Contents
Bryoria capillaris	yellow	pale pink-orange	negative	alectorialic and barbatolic acids
B. pseudofuscescens	yellow then red	negative	negative	norstictic acid
B. friabilis	negative	orange	red	gyrophoric acid

Many specimens of *Bryoria pseudofuscescens* give only a brown reaction in K using the usual method, not unlike the color diffusing in K from species lacking lichen substances (e.g. *Bryoria fremontii*). With the acetone extract, however, these specimens gave blood-red reactions to K. In all specimens showing norstictic acid by TLC, we obtained a definite K+ red reaction.

Similarly, the color reaction of gyrophoric acid is often very subtle or not apparent in spot tests on *Bryoria friabilis* fragments on paper. Many specimens lacking gyrophoric acid will give a weak but false positive test on paper, showing a faint pinkish brown tinge under an incandescent microscope lamp. When the acetone extract is used, a definite orange reaction occurs if gyrophoric acid is present (confirmed by TLC).

One of us (RR) has student workers testing hundreds of *Bryoria* samples from flying squirrel nests and forest litter. These workers report that the new method gives much more reliable and consistent results than spot tests on paper. They also report that when spot tests on paper are used, better results with the K test are obtained on plain white photocopy paper than on filter paper or cotton bond paper, presumably because the slower absorbence of the reagent by the paper allows the chemical reaction to proceed more completely.

The acetone extract method may also prove useful in other genera. We also experimented with *Xanthoparmelia* to see if it would help resolve the long-troublesome problem of distinguishing norstictic, stictic, and salacinic acids with spot tests. Our preliminary trials in that genus have not given us greatly improved results. The contents of most specimens were distinguishable (Table 2) no better than normal spot tests on the medulla. Salacinic acid was difficult to differentiate in specimens with low concentrations.

Table 2. Examples of *Xanthoparmelia* spot test results in using acetone extracts.

K reaction	Contents
yellow turning orange	stictic acid
yellow turning bright red	norstictic acid
yellow turning dull red, fades to brown	salacinic acid

The acetone extract method may be useful in other genera with dark pigments or thin medullas (e.g. some species of *Melanelia* and *Umbilicaria* and the *Cetraria hepatizon* group). Meanwhile, we believe the acetone extract method is suitable for routine, reliable spot tests in *Bryoria*.

Literature Cited

Brodo, I. M. & D. L. Hawksworth. 1977. *Alectoria* and allied genera in North America. *Opera Botanica* 42:1-164.

Notes on the *Bryorias* used by flying squirrels for nest construction

Roger Rosentreter[1] & Lucinda Eslick[2]

Maser (1988) noted that northern flying squirrels frequently use lichens, especially *Bryoria* species, for nest construction. However, Maser (1988) did not distingush among the different species of *Bryoria* that composed the nests he examined. The identification of nest lichens becomes more difficult with age, as flying squirrel urine encourages mold growth and general disintegration of the lichens. Thus, chemical analyses must be utilized for distinguishing among *Bryoria* species. This article outlines procedures for distinguishing *Bryoria* species from flying squirrel nests collected in coniferous forests of the interior northern Rockies. Results on the species of *Bryoria* present in the nests by forest types will be reported separately by Hayward and Rosentreter (1993 in review).

The squirrels stuff their mouths with individual bites and carry the mouthful to their nests. At other times they stuff as much as possible of a large pendent lichen into their mouths, folding it and drag the rest behind, sometimes with an attached twig. Some mouthfuls were 6 to 20 cm long.

Flying squirrel nests were collected by climbing trees and removing nests from either an internal cavity, a man-made nest box, or external clusters of branches. Over 200 flying squirrels nests were examined to determine lichen species presence. Lichen color often depended on the freshness of the nest, rather than taxonomic differences. However, the standard chemical tests did not seem to be affected by the disintegration of the nests. Therefore, a key was developed that relies heavily on chemical characteristics. Modified methods for conducting these color tests were developed for *Bryoria* specimens in poor condition. Nomenclature follows Brodo and Hawksworth (1977).

Notes on Color Tests for Bryoria. There are three alternative methods of conducting color tests that are easier to do and interpret than thin layer chromotography (TLC). One method is to use good quality bond paper or filter paper as presented in Brodo and Hawksworth (1977). A second method is to use cheap white typing paper, not high quality bond or filter paper, to perform the color test. The cheap typing paper used in method two will absorb the solution more slowly and allow time for the maximum amount of lichen acid to leach out. The third method is the acetone extract method of McCune and Rosentreter (1993).

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Different concentrations for the KOH test are given in the literature (White and James 1985). No more than a 10% solution should be used on *Bryoria* taxa. Stronger solutions and solutions that become concentrated by ageing do not penetrate the thalli as well as do lower concentrations. Higher concentrations are too viscous. Application of the solution using a capillary tube is recommended. Only enough solution to moisten the specimens and the paper in contact with that specimen should be used.

Small filaments of *Bryoria* should be broken off at about 5 mm lengths and a cluster of 6-12 filaments placed together.

P+ Red - On soredia, color ranges from orange to bright red.

P+ Yellow - On thallus, color ranges from light yellow to school bus orange-yellow.

K+ Yellow - On thallus, drying to somewhat of a brownish yellow color.

K+ Red - On thallus, actually reddish brown to brown due to pigments of the thallus. If acid is strong or the thallus is very light colored then the K+ reaction may look like drying blood. Sometimes reddish crystals will appear on the paper as it dries. Watch as the KOH soaks in; if yellowish pigment with a reddish tinge is the first to appear, it is probably K+ red. A dark branch that is very rich in acid may leave a bright red speck on the paper. More often, the lichen has only a small amount of acid and the resulting spot is brown with only a faint reddish tinge. In doubtful cases, moving the lichens aside with a needle may reveal a reddish area underneath.

Key to *Bryoria* found in flying squirrel nests in the interior Northern Rockies forests.

1a. Soredia present **2**
  2a. Soredia yellow .... *B. fremontii*
  2b. Soredia another color **3**
    3a. Soredia white to green, P+ yellow to flame red (old soredia may test P-); thallus dark brown to black; (fumarprotocetraric acid present) .... *B. fuscescens* complex.
    3b. Soredia dull yellow (whitish, if thalli are old and dead, test P-, new-looking soredia will test P-); thallus a little coarser and golden brown to dark brown .... *B. fremontii*
1b. Soredia absent **4**

4a. Thallus K- 5
  5a. Thallus P+ yellow or red .... *B. fuscescens* complex
  5b. Thallus P- 6
    6a. Thallus chocolate brown .... *B. oregana*
    6b. Thallus olive brown, dark or olive black 7
      7a. Thallus fine < 0.4 mm generally ... *B. fuscescens* complex
      7b. Thallus more coarse > 0.4 mm generally (except at tips) .... *B. fremontii*
4b. Thallus K+ 8
  8a. Thallus K+ red to brown and P+ yellow, (norstictic acid present) ....*B. pseudofuscescens*
  8b. Thallus K+ yellow and P+ yellow (alectorialic & barbatolic acids present) .... *B. capillaris*

Bryoria fuscescens complex includes, *Bryoria fuscescens* sen. lat., *B. glabra*, and *B. lanestris*.

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Literature Cited

Brodo, I. M. and D. L. Hawksworth. 1977. *Alectoria* and allied genera in North America. *Opera Botanica* 42: 1-164.

Hayward, G., and R. Rosentreter. 1993. Flying squirrels are the nests: their pantry? *Journal of Mammalogy*, in review.

Maser, C. 1988. *The redesigned forest*. R. & E. Miles, San Pedro, CA. 234 pages.

McCune, B. and R. Rosentreter. 1993. Improved spot tests for *Bryoria*. *Evansia* 10: 58-60.

White, F. J. and P. W. James. 1985. A new guide to microchemical techniques for the identificaton of lichen substances. *British Lichen Society Bulletin No. 57* (suppl.)

Should mosses have common names?
Part 9. The Common Names of Orthotrichales

Janice M. Glime[1]

Since the members of Orthotrichales are small, they have not been used extensively. However, like most epiphytes, many are sensitive to air pollution. *Orthotrichum obtusifolium* is sensitive to hydrogen fluoride [HF] (LeBlanc *et al.* 1971, 1972), and Nehira & Une (1980) found that *Orthotrichum consobrinum* and *Macromitrium japonicum* are only found in less urbanized areas around Hiroshima, Japan. Taoda (1972) found that *Venturiella sinensis* was among the most sensitive mosses when exposed to SO_2 in Tokyo air, and Li & Gao (1981) found that it had disappeared from Shanghai, presumably because of air pollution.

Lacking uses on which to base names, people have named the Orthotrichales based on the characters of the moss. The calyptra is the most distinctive feature in this order, and thus most of the common names relate to this structure. Bristle moss is a common one in use, referring to the upright hairs on the calyptra of *Orthotrichum*. Bell-hat moss refers to the shape of the calyptra of *Venturiella*. Species names generally describe the calyptra.

Conventions in formatting follow Glime (1989). The **meaning** of the scientific name, as supplied by Elizabeth Dunham, is provided immediately after the scientific name. Any structure to which the name applies is in parentheses. Nomenclature follows Anderson, *et al.* (1990).

Erpodiaceae
Venturiella C. Müll.: bell-hat moss[14]

Orthotrichaceae
Amphidium Schimp.: turtle moss[13]; bottle moss[14]; funnel moss[25]
Amphidium lapponicum (Hedw.) Schimp.: Lapland beardless moss[8]; Lapland yoke moss[11]; Kamegoke = turtle moss[13]; common bottle moss[14]; Lapp funnel moss[25]
Amphidium mougeotii (Bruch & Schimp. in B.S.G.) Schimp.: Mougeot's yoke moss[11]; Inukamegoki = false turtle moss[13]; Mougeot's bottle moss[14]; cushion funnel moss[25]
Drummondia Hook. in Drumm.: for Drummond of America[9]; large spore moss[13]; wood-coat moss[14]
Drummondia prorepens (Hedw.) Britt.: large spore moss[13]; common wood-coat moss[14]
Groutiella Steere in Crum & Steere: small-straw-cape moss[14]
Macrocoma sullivantii (C. Müll.) Grout: narrow straw raincoat moss[13]

Macromitrium Brid.: straw raincoat moss[13]; palm-bark-cape moss[14]

Orthotrichum Hedw.: upright hair (of calyptra)[9]; straight hair tree mosses[2]; straight-haired mosses[5]; bristle moss[8]; erect rib moss[13]; wood-bark moss[14]; straight hair tree moss[16]; bristle-moss[20]; hood moss[25]

Orthotrichum affine Brid.: pale straight-leaved bristle moss[8]; many-stalked bristle moss[11]; wood bristle-moss[20]; striped hood moss[25]

Orthotrichum alpestre Hornsch. in B.S.G.: north hood moss[25]

Orthotrichum anomalum Hedw.: anomalous bristle moss[8, 11]; common wood-bark moss[14]; red-shafted hood moss[25]

Orthotrichum cupulatum Brid.: single-fringed sessile-fruited moss[8]; sessile-fruited bristle moss[11]; chalk hood moss[25]

Orthotrichum diaphanum Brid.: white-tipped bristle moss[8]; transparent-leaved bristle moss[11]; hair hood moss[25]

Orthotrichum exiguum Sull.: small erect rib moss[13]; small wood-bark moss[14]

Orthotrichum gymnostomum Bruch ex Brid.: aspen hood moss[25]

Orthotrichum lyellii Hook. & Tayl.: Mr. Lyell's bristle moss[8]; Lyell's bristle moss[11]; Lyell/s bristle-moss[20]; large hood moss[25]

Orthotrichum obtusifolium Brid.: blunt-leaved bristle moss[11]; round-leafed erect rib moss[13]; obtuse-leaf wood-bark moss[14]; blunt hood moss[25]

Orthotrichum pallens Bruch ex Brid.: pale-fruited bristle moss[8]; pale bristle moss[11]; park hood moss[25]

Orthotrichum pallens var. *crenulatum* Vitt: pale-fruited bristle moss[8]; pale bristle moss[11]

Orthotrichum pellucidum Lindb.: arctic hood moss[25]

Orthotrichum pulchellum Brunt. in Winch & Gateh.: elegant bristle moss[8]; pretty bristle moss[11]; red-toothed hood moss[25]

Orthotrichum pumilum Sw.: low bristle moss[11]; dwarf hood moss[25]

Orthotrichum pylaisii Brid.: dung hood moss[25]

Orthotrichum rivulare Turn.: river bristle moss[8]; water bristle moss[11]; river bristle-moss[20]

Orthotrichum rupestre Schleich. ex Schwaegr.: rock straight-haired moss[5]; rock bristle moss[8, 11]; mountain hood moss[25]

Orthotrichum sordidum Sull. & Lesq. in Aust.: Hokkaido small ball moss[13]

Orthotrichum speciosum Nees in Sturm: showy bristle moss[8]; great bristle moss[11]; yellow wood-bark moss[14]; tree hood moss[25]

Orthotrichum stramineum Hornsch. in Brid.: straw-like bristle moss[8]; straw-colored bristle moss[11]; forest hood moss[25]

Orthotrichum strangulatum P. Beauv.: Drummond moss[2]

Orthotrichum striatum Hedw.: smooth-fruited bristle moss[8]; Shaw's bristle moss[11]; smooth hood moss[25]

Orthotrichum tenellum Bruch ex Brid.: slender-fruited bristle moss[8, 11]; little hood moss[25]

Schlotheimia Brid.: fir moss[13]; fire moss[14]

Ulota Mohr.: something curled (dry leaves)[9]; curled-leaf mosses[4]; golden hair moss[13]; rolled-leaf moss[14]; ulota[25]

Ulota coarctata (P. Beauv.) Hammar: puckered weissia[1]; club-fruited bristle moss[11]; pear ulota[25]

Ulota crispa (Hedw.) Brid.: crisped weissia[1]; crisped ulota[6]; curled bristle moss[8]; great curled bristle moss[11]; Sachalin golden hair moss (place in Hokkaido)[13]; northern rolled-leaf moss[14]; ruffled ulota[25]

Ulota curvifolia (Wahlenb.) Lilj.: Nordic ulota[25]

Ulota drummondii (Hook. & Grev.in Grev.) Brid.: Mr. Drummond's bristle moss[8]; Drummond's bristle moss[11]; common rolled-leaf moss[14]; white breath ulota[25]

Ulota hutchinsiae (Sm.) Hammar: American weissia[1]; Miss Hutchins' bristle moss[8]; Miss Hutchins' bristle-moss[11]; stone ulota[25]

Ulota obtusiuscula C. Müll. & Kindb. in Mac. & Kindb.: obtuse ulota[5]

Ulota phyllantha Brid.: curled leaf moss[2]; bud-leaved ulota[4]; ocean ulota[5]; frizzled bristle moss[11]; frizzled bristle-moss[20]; salt ulota[25]

Zygodon Hook. & Tayl.: yoke moss[8]; paired-teeth moss[14]; verdigris moss[25]

Zygodon conoideus (Dicks.) Hook. & Tayl.: lesser yoke moss[8, 11]; common paired-teeth moss[14]; Atlantic verdigris moss[25]

Zygodon gracilis Wils. in Berk.: slender yoke moss[11]

Rhacitheciaceae

Rhacithecium Broth. ex Le Jolis: spine moss[14]

Rhacithecium perpusillum (Thwaites & Mitt. in Mitt.) Broth.: common spine moss[14]

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[1] Grout, A. J. 1900. *Mosses with a hand-lens*. Press of Binghampton Republican, New York, 74 Pp.; Grout, A. J. 1903. *Mosses with a handlens and microscope*. By Author. N. Y.

[2] Bland, J. 1971. *Forests of Lilliput*. Prentice-Hall, Inc., Englewood Cliffs. 210 Pp.

[4] Marshall, N. L. 1907. *Mosses and lichens*. Doubleday, Page, & Co., N. Y. 327 Pp.

[5] Harthill, M. P. & I. O'Connor. 1975. *Common mosses of the Pacific coast*. Naturegraph.

[6] Welch, W. H. 1957. *Mosses of Indiana. An illustrated manual*. The Bookwalter Company, Indianapolis. 478 Pp.

[8] Stark, R. M. 1860. *A popular history of British mosses, 2nd edition*. Routledge, Warne, & Routledge, London (Wheldon & Wesley), 348 Pp.

[9] Dunham, E. M. 1951. *How to know the mosses*. The Mosher Press, Boston.

[11] Tripp, F. E. 1888. *British mosses, their homes, aspects, structure and uses*. George Bell & Sons, Covent Garden, London (Wheldon & Wesley), 2 Vol.

[13] Dr. Zen Iwatsuki (personal communication)

[14] Jinkun Zhang (personal communication, translated from Wu *et al.* 1984)

[16] Thomas, L. P. & J. R. Jackson. 1985. *Walk softly upon the earth. A pictorial guide to Missouri mosses, liverworts and lichens.* Missouri Department of Conservation, Jefferson City, 129 pp.

[20] Russell, T. H. 1910. *Mosses and liverworts. An introduction to their study, with hints as to their collection and preservation.* Sampson Low, Marston & Co., LD. 211 Pp., 10 plates.

[25] Hallinbäck, T. & L. Söderström. 1987. Sveriges mossor och deras svenska namm -- en kommenterad checklista. [The bryophytes of Sweden, an annotated checklist with common names.] Svensk Bot. Tidskr. 81: 357-388.

Literature Cited

Anderson, L. E., Crum, H. A. & Buck, W. R. 1990. List of the mosses of North America North of Mexico. *The Bryologist* 93: 448-499.

Glime, J. M. 1989. Should mosses have common names? *Evansia* 6(1):1-6.

LeBlanc, F., Comeau, G. & Rao, D. N.. 1971. Fluoride injury symptoms in epiphytic lichens and mosses. *Can. J. Bot.* 49: 1691-1698.

LeBlanc, F., Rao, D. N. & Comeau, G. 1972. The epiphytic vegetation of *Populus balsamifera* and its significance as an air pollution indicator in Sudbury, Ontario. *Can. J. Bot.* 50: 519-528.

Li, D. K. & Gao, C. H. 1981. Bryophytes and air pollution in Shanghai. *Bot Mag., Peking* 4: 6.

Nehira, K. & Une, K. 1981. Distribution and ecology of epiphytic bryophytes in urban environments of Hiroshima city. *Hikobia suppl.* 1: 425-429.

Taoda, H. 1972. Mapping of atmospheric pollution in Tokyo based upon epiphytic bryophytes. *Jap. J. Ecol.* 22: 125-133.

Observations on Mosses New or Rare to Ohio

Jerry Snider[1] & Si He[1,2]

Field collections made over the past several years and reexamination of herbarium materials has resulted in the addition of nine taxa new to Ohio and the discovery of six additional taxa considered to be rare throughout the state. All collections are on deposit in herbarium CINC except where designated. Taxa indicated with an asterisk represent mosses newly reported for Ohio.

Anoectangium aestivum (Hedw.) Mitt.--**Hocking Co.**: Hocking Hills State Park, Snider & Allen 2335, 2344, on moist vertical sandstone cliff faces; **Jackson Co.**: Lake Katharine State Nature Preserve, Snider 3012, on sandstone cliff face; **Vinton Co.**: NW ¼, Sect. 2, Jackson Twp., Allensville Quad., Cusick & Rice, 15 II 1984, moist, shaded Blackhand sandstone. None of the above collections contained sporophytes, but did exhibit lateral perichaetia. Giesy (1957) did not include this species in his Ohio checklist; however, Crum & Anderson (1981) report the occurrence of this taxon in the eastern U.S. from New York, Ohio, Tennessee, and North Carolina. This species may turn out to be somewhat common in unglaciated eastern Ohio but may have been overlooked because of its similarity in the field, at least in our material, to sterile tufts of *Gymnostomum*.

Anomobryum filiforme* (Dicks.) Solms in Rabenh.--Hocking Co.**: Hocking Hills State Park, Old Man's Cave area, Snider 1554, growing on very moist, man-made rock wall beside stairs above tunnel along west rim trail. Crum & Anderson (1981) give the distribution for this taxon in the eastern U.S. as ranging from Minnesota, Wisconsin, and Michigan south through New England, New York, Virginia, North Carolina and Tennessee, and disjunct to Missouri.

Archidium ohioense Schimp. ex C. Müll.--**Hocking Co.**: Crane Hollow State Nature Preserve, Snider & He 3708, single plant in track of little-used roadbed, on clay, with *Notothylas orbicularis*, *Anthoceros punctatus*, *Phaeoceros laevis*, *Fossombronia cristula*, *Micromitrium austinii*, *Aphanorrhegma serratum*, *Ephemerum spinulosum* and *Fissidens hyalinus*. This species has previously been recorded from two sites in Ohio: one a collection made by W. S. Sullivant, in 1842, in the vicinity of Columbus in Franklin Co.(herbarium PH) in central Ohio, and Osterbrock & Snider (1985) reported it from southernmost Adams County.

Atrichum tenellum* (Röhl.) Bruch & Schimp. in B.S.G.--Hocking Co.**: Hocking Hills State Park, Snider 1984, on wet sandstone ledge adjacent to waterfall; Crane Hollow State Nature Preserve, Snider & He 3411, 3595, on wet sandstone ledges near margins of waterfalls in moist hemlock-hardood coves. According to Crum & Anderson (1981) this is a more northernly species which occurs in the Maritime Provinces of Canada, and Ontario and Quebec. They report it only from Wisconsin in the U.S.; however, Ireland (1982) also

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records it from Illinois. Thus, the present collections represent a rather significant southern range extension for this taxon.

Buxbaumia minakatae* Okam.--Champaign Co.**: Cedar Bog Memorial State Nature Preserve, S of Urbana, Snider 2760, on seeping, rotting log, in hardwood swamp. Crum & Anderson (1981) report this species as a "great rarity" and record North American collections from Nova Scotia, Massachusetts, Michigan, New York, Vermont, Virginia, and North Carolina. Ireland (1982) also reports it from Ontario and British Columbia(?). The present collection was made in a (presumed) relic white cedar swamp, and represents the southeasternmost range for the species in the U.S.

Campylostelium saxicola (Web. & Mohr) Bruch & Schimp. in B.S.G.--**Hocking Co.**: Crane Hollow State Nature Preserve, Snider & He 3266, 3267, on wet ceiling of sandstone shelter cave; **Scioto Co.**: Shawnee State Forest, Snake Hollow, Snider 4873, on moist undersurface of sandstone ledge. Reported rare and scattered in North America by Crum & Anderson (1981), they note its distribution in the eastern U.S. as ranging from Prince Edward Island, New England, New York, New Jersey and south in the Appalachians to South Carolina, eastern Tennessee, inland to southern Ohio, the Cumberland Mountains of Kentucky and central Tennessee, and the Boston Mountains in Arkansas. Geisy (1957) cites Ohio collections from Gallia, Pickaway, Scioto and Washington counties.

Diphyscium cumberlandianum* Harvill--Hocking Co.**: Sheick Hollow State Nature Preserve, Snider & He 3773, 4234, 4238, on moist sandstone in spray zone of small waterfalls; **Jackson Co.**: Lake Katherine State Nature Preserve, Snider & He 3100, on shaded vertical sandstone cliff face. Crum & Anderson (1981) state that this species is endemic to the mountains of Alabama, Kentucky, North Carolina, South Carolina, and Tennessee. The present collections represent the northernmost range for the species.

Fissidens hyalinus Wils. & Hook.--**Hocking Co.**: Crane Hollow State Nature Preserve, Snider & He 3692, in track of little-used roadbed, on clay, with *Notothylas orbicularis, Anthoceros punctatus, Phaeoceros laevis, Fossombronia cristula, Micromitrium austinii, Aphanorrhegma serratum, Ephemerum spinulosum* and *Archidium ohioense*; Sheick Hollow State Nature Preserve, Snider & He 3721, 4153, on bare soil along bank of creek. The widely scattered, delicate, fruiting.plants were found along a recently eroded stream bank in late August and early September, growing mixed among fruiting plants of *Fissidens exilis* and *Pogonatum pensilvanicum*. Whereas the spores in the capsules of the sporophytes of *F. exilis* contained immature spores, those in *F. hyalinus* were just beginning to undergo meiosis. Reese (1992) also recently reported a second occurrence in Louisiana for this rarity. His habitat description for the Louisiana collections is essentially identical to our observations on the Ohio population. *Fissidens hyalinus* has been previously reported from two locations in Ohio, the first from the type locality, "moist rocky ledges, Bank Lick, near Cincinnati" by Thomas Lea (Lesquereux & James, 1884). The latter suggests that the type location is in Ohio. However, Lea also made extensive collections on the Kentucky side of the Ohio River. According to Braun (1934), Bank Lick, a creek which flows into the Licking River in Kenton County, Kentucky a few miles across the Ohio River from Cincinnati, was a "prolific source of specimens for Lea." Consequently, there is little doubt that the type locality is in Kentucky and not Ohio. We have also seen a specimen from Letcher Co., Kentucky, collected with *Taxiphyllum taxirameum* on disturbed soil in a beech forest. The second specimen reported from Ohio was collected from "clay banks near Painesville" (Lesquereux & James, 1884) in Lake County. The rarity of *Fissidens hyalinus* is likely associated with its minute size, specialized habitat and ephemeral nature. The latter, in particular, permits only a very narrow window of opportunity for even the most experienced collector.

Plagiothecium latebricola Schimp. in B.S.G.--**Champaign Co.**: Cedar Bog State Memorial Nature Preserve south of Urbana, Snider 2510, on base of maple in hardwood swamp forest. **Hocking Co.**: Crane Hollow State Nature Preserve, Snider & He 3639, 4140 in wet knothole of elm, and on wet decorticated hardwood log. A collection identified as this taxon was cited by Giesy (1957) from Jackson County, but no specimen could be found in the OS herbarium. Ireland (1985) states that this rare or seldom collected species occurs in eastern North America from Newfoundland south to Michigan, Wisconsin, New York and New Jersey. Thus, the Ohio collections represent the southernmost range for this uncommon species.

Pleuriditrichum marylandicum* Andrews & Hermann--Jackson Co.**: Lake Katharine State Nature Preserve, Snider & He 3071, on disturbed soil under power line right-of-way. This putative hybrid between *Pleuridium subulatum* and *Ditrichum pallidum* was first described and illustrated by Andrews & Hermann (1959) from a collection made in Maryland. Anderson and Snider (Crum & Anderson, 1981) have found similar hybrids in North Carolina. The plants actually consist of sporophytes (containing aborted spores) growing from *Pleuridium* gametophytes in mixed collections of the putative parents. This report is the first record for the hybrid from Ohio.

Polytrichum pallidisetum* Funck--Hocking Co.**: Hocking Hills State Park, Snider & He 3239, 3240, 3241; Conkle's Hollow State Nature Preserve, Snider & He 3985, 4019, 4097; Sheick Hollow State Nature Preserve, Snider & He 4159; Crane Hollow State Nature Preserve, Snider & He 3408, 3461, 3500. on thin soil over sandstone boulders in hemlock/hardwood coves. Crum & Anderson (1981) record the distribution of this species as ranging from Prince Edward Island to northern Ontario, throughout New England and the Great Lakes region, south in the Appalachians to Tennessee and South Carolina. Although this represents the first report for this species in Ohio, it likely has simply been overlooked in the field because of its similarity to the very common *Polytrichum ohioense*. Our populations were restricted to thin soil over sandstone boulders strewn among scattered populations of *Polytrichum ohioense*. A thorough search through herbarium collections of *P. ohioense* and *P. commune* will likely turn up more collections of this species. In the field, fruiting *Polytrichum* plants exhibiting rather long-beaked opercula usually suggest the presence of *P. pallidisetum*. Sterile specimens often can be recognized by the strongly inrolled upper leaf margins when dry. *Polytrichum commune* exhibits this feature to a lesser degree, but occurs in moist habitats.

Ptychomitrium drummondii* (Wils.) Sull.--Preble Co.**: Hueston Woods State Park Interpretive Area, Snider 2224, on trunk of sugar maple in mature beech-maple forest. Crum & Anderson (1981) describe this species as ranging throughout the Piedmont and Coastal Plain of the southeastern U.S., from Delaware to Florida and west to Texas, Missouri and

Oklahoma. The Ohio collection represents a significant range extension for this species.

*_Racomitrium aciculare_ (Hedw.) Brid.--**Hocking Co.**: Hocking Hills State Park, Snider 2774; Little Rocky Hollow State Nature Preserve, Snider & He 3849, 4286, on wet sandstone along top edge of small waterfalls. Crum & Anderson (1981) record the distribution of this species in the east as ranging from Newfoundland and Labrador to the Lake Superior region of Ontario and Michigan, south in the Appalachians to North Carolina, Georgia, and Tennessee.

Seligeria recurvata (Hedw.) Bruch & Schimp. in B.S.G.--**Scioto Co.**: Shawnee State Forest, Snake Hollow, Snider 4875, on sandstone boulder. Vitt (1976) states that the taxon is rare and sporadic. He cites an Ohio collection "29 km above Columbus, ex herb. Sullivant, June, 1845" in his monograph of the genus. Crum & Anderson (1981) state that this taxon prefers sandstone to limestone substrates and report its occurrence in eastern North America from Michigan, Wisconsin, Quebec, New Brunswick, Newfoundland, New York, New Jersey, Pennsylvania, Ohio, Tennessee,and Missouri.

*_Thuidium allenii_ Aust.--**Champaign Co.**: County Line bog, R. J. Wareham 1110 (OS). This collection, made in 1936, was missidentified as _Thuidium delicatulum_. According to Crum & Anderson (1981) this is essentially an Atlantic and Gulf Coastal Plains species, "but extending northward in the Mississippi Embayment area as well." They record it from Florida to Texas and north to Connecticut, Tennessee, Indiana, and Arkansas.

Weissia sharpii Anderson & Lemmon--**Greene Co.**: John Bryan State Park, Clifton Gorge area, Snider & Anderson 1520, on thin, dry soil over limestone, among cedars. Anderson & Lemmon (1973) and Osterbrock & Snider (1985) also cite collections from southernmost Adams County. Crum & Anderson (1981) record this species from Alabama, Arkansas, Georgia, Kentucky, Missouri, Ohio and Virginia.

Literature Cited

Anderson, L.E. & B.E. Lemmon. 1973. _Weissia sharpii_, a new species from North America with cytological and ecological correlations. _The Bryologist_ 76: 131-143.

Andrews, A.L. & F.J. Hermann. 1959. A natural hybrid in the Ditrichaceae. _The Bryologist_ 62: 119-122.

Braun, E.L. 1934. The Lea Herbarium and the Flora of Cincinnati. _American Midland Naturalist_ 15(1): 1-75.

Crum, H. & L. E. Anderson. 1981. _Mosses of Eastern North America_, vols. 1, 2. New York.

Giesy, R. M. 1957. Studies in Ohio Bryophytes. _Ohio Journal of Science_ 57(5): 290-312.

Ireland, R.R. 1982. _Moss Flora of the Maritime Provinces_. Ottawa.

Ireland, R.R. 1985. The genus _Plagiothecium_ in North America. _Evansia_ 2(1): 4-9.

Lequereux, L. & James. 1994. _Manual of Mosses of North America_. Boston.

Osterbrock, A.J. & J.A. Snider. 1985. A Checklist of the Bryophytes of the Edge of Appalachia Preserve System, Adams County, Ohio. _Ohio Journal of Science_ 85(3): 138-143.

Reese, W. D. 1992. The Second Find of _Fissidens hyalinus_ in Louisiana. _Evansia_ 9(1): 5-6.

Vitt, D. H. 1976. The genus _Seligeria_ in North America. _Lindbergia_ 3 (3-4): 241-275.

New Records for Kansas Mosses, IV

G. L. Smith Merrill[1]

Abstract. New Kansas distributional records are given for 31 species of mosses. The recently described endemic moss, *Ozobryum ogalalense* Merr. (Pottiaceae) is now known from four localities in Decatur and Rawlins Counties, Kansas, and Hitchcock County, Nebraska. *Leskea polycarpa* Hedw. is listed as new to the Kansas moss flora. Mosses are reported from 9 Kansas counties.

This is the fourth in a continuing series of papers listing new distributional records for mosses in the state of Kansas (Merrill, 1989, 1991a, 1991b). The list which follows is divided into three sections: first, reports of mosses new to the Kansas moss flora; second, reports of species considered rare in Kansas, or significant extensions of range within the state; and third, reports of more common species. Included are collections from the University of Kansas Ecological Reserves, Douglas and Jefferson Counties (Merrill & Timme, 1991). Two records listed below are included among 48 species of mosses and 6 liverworts new to the bryoflora of Neosho County, included in a recently completed master's thesis (Nonnenmacher, 1992).

The moss flora of the western half of the state of Kansas, as well as that of the central plains in general, is still poorly collected. The recent description of *Ozobryum ogalalense*, a new moss genus and species from NW Kansas (Merrill, 1992), and the presence of the endemic *Aschisma kansanum* in south central Kansas (Andrews, 1915) suggest the possibility that other endemic bryophytes may be present in the region. *Ozobryum* was first collected in Decatur County by Vernon L. Wranosky of Colby, Kansas during the summer of 1990. Several additional localities were discovered by Wranosky and the author during a visit to the area in April 1991. The plants obviously belonged to the Pottiaceae, but did not seem to match anything in the North American literature. Part of the original collection was sent to Lewis Anderson, who reported that it was probably an undescribed genus and species. Howard Crum and Richard Zander also examined portions of the specimen and agreed that the plant was probably new to science. The species occurs on lime-rich outcrops known locally as "mortarbeds", which form low benches or low bluffs along the upper reaches of streams south of the Republican River.

Some of the species reported here from western Kansas occur in Colorado and elsewhere in western North America. Many species whose ranges extend across the continent probably occur here and there in favorable sites throughout the central plains (e.g. *Campylium chrysophyllum*, *Schistidium alpicola*). It is only 160 miles from the Kansas-Colorado line to the Front Range of the Rocky Mountains at Boulder. Some eastern species (e.g. *Brachythecium oxycladon*) apparently reach the western limit of their range somewhere in western Kansas; others are western mosses at or near their eastern limit of distribution (e.g. *Brachythecium collinum*). The Colorado distributions mentioned in this paper are taken from Weber (1973).

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Frequency is expressed according to the following scale: "rare" = reported from 1-5 counties, "infrequent" = 6-15, "frequent" = 16-25, and "common" = more than 25. There are 105 counties in Kansas. Distribution of species is given as "widespread" = species found throughout the state, "eastern" =species of the eastern one-third to half of the state, or "western" = species of primarily western affinities, found only in western Kansas. The line between eastern and western Kansas is the 6th Principal Meridian, or approximately the western edge of the Flint Hills Upland.

Nomenclature for the most part follows that of Anderson et al. (1990). Specimens cited by number only are my own collections. All specimens cited are deposited in the Reed Bryophyte Herbarium, Kansas State University Herbarium (KSC).

I. Additions to the Kansas Moss Flora

Leskea polycarpa Hedw. **RILEY CO**: on rotten wood at edge of a brome field, Konza Prairie Research Natural Area, 10mi S of Manhattan, 21 Feb 1991, 12832. This species evidently has not been reported before from Kansas. It is likely to be much less common than the weedy *Leskea gracilescens* Hedw., and confined to the eastern part of the state. This moss has probably been passed over many times in collecting. *Leskea obscura*, another closely related species, was reported from Kansas by McGregor (1950).

Ozobryum ogalalense Merr. **DECATUR CO**: on Ogallala Formation mortarbeds, 15mi SW of Oberlin, Wranosky 62, Merrill 12888; on N-facing mortarbed cliffs, 1.5mi S of Traer, 30 Apr 1991; RAWLINS CO: on mortarbeds, 14mi SE of Atwood, Wranosky 69, Merrill 12901 (Merrill, 1992). Rare. Also reported from Hitchcock County, Nebraska. *Ozobryum* is the first endemic genus of mosses to be discovered in the Great Plains. Among its distinguishing features are the curious frosted and succulent appearance of the leaves, which are bistratose and coarsely mamillose on both surfaces, the greatly reduced costa, and lateral female inflorescences. The plants form soft, compact cushions on moist vertical outcrops, resembling a miniature *Gymnostomum*.

II. Additional County Records for Rarer Kansas Mosses

Barbula indica (Hook.) Spreng. **DOUGLAS CO**: exposed limestone rock, University of Kansas (Fitch) Natural History Reservation, 19 Mar 1954, Hartman & McGregor 37 (cf Hartman 1956); **NEOSHO CO**: on dry sandstone on shoreline of Santa Fe Lake, 24 Aug 1991, Nonnenmacher KSC 10708. Rare; eastern. Reported from Franklin, Montgomery, and Wabaunsee Counties.

Brachythecium collinum (Schleich. ex C.M.) Schimp. **DECATUR CO**: on shaded mortarbed outcrop ledge in prairie pasture, 15mi SW of Oberlin, 30 Apr 1991, 12896. Rare. A western North American species previously reported from Cheyenne County, in the extreme northwest corner of the state (Churchill, 1985).

Bryhnia graminicolor (Brid.) Grout **DOUGLAS CO**: on soil, steep-sided wooded ravine, Breidenthal Biological Reserve (Baldwin Woods), 2mi N Baldwin City, 30 May 1991, 12978. Rare; eastern. Earlier reported from Doniphan, Franklin, and Woodson Counties.

Campylium chrysophyllum (Brid.) J. Lange **DECATUR CO**: on soil under shrubs at base of mortarbed outcrop on steep N-facing slope, 1.5mi S of Traer, 30 Apr 1991, 12811; JEFFERSON CO: 13054. Common in the east, but not recorded before from the western third of the state. The Decatur County collection is a westward extension of range in Kansas of about 120 miles; also in Colorado, from the foothills to higher elevations.

Funaria americana Lindb. **SALINE CO**: on soil, steep slope of wooded ravine, 3mi SW of Brookville, 23 May 1991, 12964. Rare; north central Kansas. Also in nearby Ellsworth, Jewell and Republic Counties.

Hyophila involuta (Hook.) Jaeg. **DOUGLAS CO**: on sandstone boulders in streambed in wooded ravine, Breidenthal Biological Reserve (Baldwin Woods), 30 May 1991, 12311. Rare; eastern. A single previous report from Marshall County (Churchill, 1985).

Physcomitrium collenchymatum Gier **JEFFERSON CO**: on soil under prairie grasses, Nelson Environmental Study Area, 26 Jun 1991, 13052. Rare; eastern. A single previous report from adjoining Douglas County (Churchill, 1985).

Platydictya confervoides (Brid.) Crum **JEFFERSON CO**: on shaded limestone ledge, steep-sided wooded ravine, Nelson Environmental Study Area, 26 Jun 1991, 13012. Rare; eastern. Previously reported from the adjoining Fitch Natural History Reservation in Douglas County (Hartman, 1956) and recently confirmed (Merrill, 1991b). Both localities are part of the Kansas Ecological Reserves.

Pleuridium subulatum (Hedw.) Rabenh. **ELLSWORTH CO**: on sandy soil among prairie grasses on Dakota sandstone outcrop, Mushroom Rocks State Park, S of Carneiro, 11 Apr 1991, 12879; **JEFFERSON CO**: on soil under prairie grasses, Nelson Environmental Study Area, 26 Jun 1991, 13053. Rare; eastern. The former collection is 80 miles west of an earlier one from Geary County (Merrill, 1991a). Also recorded for Crawford and Douglas Counties.

Schistidium alpicola (Hedw.) Limpr. **DECATUR CO**: cushions on N-facing rock outcrop shaded by shrubs, 1.5mi S of Traer, 30 Apr 1991, 12908. Common in the eastern half of the state. A westward extension of range in Kansas of about 150 miles; in Colorado from the foothills to the alpine zone.

Thuidium recognitum (Hedw.) Lindb. **DOUGLAS CO**: on steep sides of wooded gulley, Breidenthal Biological Reserve (Baldwin Woods), 27 Jun 1991, 13074, 13100. Rare; eastern. Previously reported from Anderson, Chautauqua, Crawford, and Linn Counties in SE Kansas.

III. New County Records for More Common Species

Aloina rigida (Hedw.) Limpr. **DECATUR CO**: 12887. Infrequent in western Kansas; Weber (1973) cites a single collection from the plains of eastern Colorado.

Amblystegium varium (Hedw.) Lindb. **SALINE CO**: 12955. Common; eastern half of Kansas.

Anomodon rostratus (Hedw.) Schimp. **JEFFERSON CO**: 13037. Frequent; eastern.

Barbula unguiculata Hedw. **ELLSWORTH CO**: 12875; **SALINE CO**: 12943. Common; widespread in Kansas and extending westward on the plains to the foothills of the Rockies.

Brachythecium oxycladon (Brid.) Jaeg. **DECATUR CO**: 12909. Common in the east, with scattered reports as far west as Scott County in Kansas; an eastern North American species.

Bryum pseudotriquetrum (Hedw.) Gaertn. et al. **JEFFERSON CO**: 13047. Frequent; eastern.

Campylium hispidulum (Brid.) Mitt. **DECATUR CO**: 12907. Common and widespread; also in the lower foothills in Colorado.

Desmatodon plinthobius Sull. & Lesq. **ELLSWORTH CO**: 12877; **DOUGLAS CO**: Hartman & McGregor 46. Common; widespread. The Douglas County specimen was reported as *Grimmia laevigata* by Hartman (1956). Also in Colorado, on the plains and outer foothills.

Eurhynchium pulchellum (Hedw.) Jenn. **JEFFERSON CO**: 13013. Infrequent; eastern.

Fissidens bryoides Hedw. **DECATUR CO**: 12907; **JEFFERSON CO**: 13017. Frequent; widespread.

Fissidens dubius Beauv. (= *F. cristatus* Wils. ex Mitt.) **GEARY CO**: 12884. Infrequent; eastern.

Fissidens obtusifolius Wils. **JEFFERSON CO**: 13031; **NEOSHO CO**: Nonnenmacher KSC 10709. Frequent; eastern.

Fissidens taxifolius Hedw. **JEFFERSON CO**: 13039. Infrequent; eastern.

Pohlia nutans (Hedw.) Lindb. **RILEY CO**: 11152. Infrequent, eastern half of Kansas.

Ptychomitrium incurvum (Schwaegr.) Sull. **SALINE CO**: 12946. Infrequent; SE and N central Kansas.

Rhynchostegium serrulatum (Hedw.) Jaeg.) **ELLSWORTH CO**: 12871. Common; eastern.

Thelia lescurii Sull. **SALINE CO**: 12945. Infrequent; primarily eastern, but also in adjoining Ellsworth County (Churchill, 1985).

Tortula ruralis (Hedw.) Gaertn. et al. **SALINE CO**: 12940. Infrequent; western. Widely distributed across the continent but absent from eastern Kansas.

Acknowledgements. Partial support was provided by Konza Prairie Research Natural Area, and the Kansas Agricultural Experiment Station. I am grateful to Lewis Anderson, Howard Crum, and Richard Zander for their expert opinions concerning the identity of *Ozobryum*, to Vernon Wranosky for collecting the type material and sending it to me for identification, and to the several land owners for permission to collect on their property.

Literature Cited

Anderson, L. E., H. A. Crum & W. R. Buck. 1990. List of the mosses of North American north of Mexico. *The Bryologist* 93: 448-499.

Andrews. A. L. 1915. Bryological notes I. *Aschisma kansanum* new species, with remarks upon the genus. *Torreya* 15: 63-67.

Churchill, S. P. 1985. A Synopsis of the Kansas Mosses. *Univ. Kansas Sci. Bull.* 53(1): 1-64.

Hartman, E. L. 1956. The bryophyte flora of the University of Kansas Natural History Reservation. *Trans. Kansas Acad. Sci.* 59: 57-70.

Merrill, G. L. Smith. 1989. New Records for Kansas Mosses. *Trans. Kansas Acad. Sci.* 92: 126-139.

________. 1991a. New Records for Kansas Mosses, II. *Trans. Kansas Acad. Sci.* 94: 22-29.

________. 1991b. New Records for Kansas Mosses, III. *Evansia* 8: 25-31.

________, & S. L. Timme. 1991. Bryophytes of the Kansas Ecological Reserves. *in* Kettle, W. D. & D. O. Whittemore (eds.), *Ecology and hydrogeology of the Kansas Ecological Reserves and the Baker University Wetlands*. Kansas Geol. Surv. Open-File Report 91-35.

________. 1992. *Ozobryum ogalalense* (Pottiaceae), a new moss genus and species from the American Great Plains. *Novon* 2:256-258.

McGregor, R. L. 1950. Studies on Kansas mosses, I. *Univ. Kansas Sci. Bull.* 33: 291-311.

Nonnenmacher, H. F. 1992. A bryofloristic survey of Neosho County, Kansas, with ecological notes. M.S. Thesis, Pittsburg State Univ.

Weber, W. A. 1973. Guide to the mosses of Colorado. Keys and ecological notes based on field and herbarium studies. *Inst. Arctic and Alpine Research, Occas. Paper* No. 6.

Program for the Annual Meeting of ABLS - 1993

Friday, July 30 - Sunday, August 1 - Foray in Northeastern Iowa.

MONDAY MORNING, 2 AUGUST

7:30 **ABLS BREAKFAST: MEMORIAL UNION**

SESSION 1 **CONTRIBUTED PAPERS:** Bryophyte structure and classification. Joint Session with the Bryological and Lichenological Section, BSA. NORTON G. MILLER, New York State Museum, Science Service, Albany, NY 12230 (518/486-2010), presiding.

9:00 SHARON E. BARTHOLOMEW-BEGAN. West Chester University, West Chester, PA. A controlled, comparative investigation of the patterns of sporeling ontogeny of *Pellia epiphylla* (L.) Corda and *Pellia neesiana* (Gott.) Limpr.

9:15 ANN E. RUSHING. Baylor University, Waco TX. Ultrastructural features of the foot of the mature sporophyte of *Lorentziella imbricata* (Mitt.) Broth.

9:30 BARBARA M. THIERS. New York Botanical Garden, Bronx. Evolutionary relationships in the Pleuroziaceae (Hepaticae).

9:45 KENNETH D. MCFARLAND*, KAREN S. RENZAGLIA, DAVID K. SMITH, MARIE HICKS and PAUL G. DAVISON. University of Tennessee, Knoxville, East Tennessee State University, Johnson City and University of North Alabama, Florence. Discovery and description of antheridia on *Megaceros aenigmaticus*.

10:00 BARBARA CRANDALL-STOTLER. Southern Illinois University, Carbondale. Ontogenetic shifts in apical organization in bryophytes and some thoughts on meristem evolution.

10:15 Recess

10:30 STEVEN L. TIMME. Pittsburg State University, Pittsburg, KS. Historical review and the current status of hepaticology in Kansas.

10:45 TERRY A. HEDDERSON* and ROYCE E. LONGTON. Louisiana State University, Baton Rouge and The University of Reading, England. Patterns of life history variation in the Funariales, Polytrichales and Pottiales.

11:00 TERRY J. O'BRIEN. University of Iowa, Iowa City. The generic affinities of *Helodium* Warnst. (Musci).

11:15 GARY L. SMITH MERRILL. Field Museum of Natural History, Chicago, IL. *Ozobryum ogalalense*, a new moss genus and species from the American Great Plains.

11:30 ALISON WITHEY. Duke University, Durham, NC. Phylogenetic relationships of the Spiridentaceae (Musci): chloroplast DNA data.

11:45 ANGELA E. NEWTON. Duke University, Durham, NC. Phylogenetic relationships in the Pterobryaceae.

MONDAY AFTERNOON, 2 AUGUST

SESSION 2 **SYMPOSIUM:** The Bryophytes of Peat-forming Ecosystems. Cosponsored by the Bryological and Lichenology Section, BSA. Organized by DALE H. VITT. Devonian Botanical Garden and Department of Botany, University of Alberta, Edmonton, Alberta, Canada T6G 2E1 (403/492-3380).

1:00 DALE H. VITT. University of Alberta, Edmonton, Canada. Introduction.

1:15 DIANA G. HORTON*, NILS MALMER and DALE H. VITT. University of Iowa, Iowa City, University of Lund, Lund, Sweden and University of Alberta, Edmonton, Canada. Peatland classiciation: how important are bryophytes?

1:45 KELMAN R. WIEDER. Villanova University, Villanova, PA. Biogeochemical cycles relative to the bryophyte layer in peatlands.

2:15 YENHUNG LI* and L. DENNIS GIGNAC. University of Alberta, Edmonton, Canada. The responses of bryophytes to gradients in peatlands.

2:45 Recess

3:00 DENNIS L. GIGNAC. University of Alberta, Edmonton, Canada. The responses of peatland bryophytes to climate.

3:30 LINE ROCHEFORT. Université Laval, Québec, Canada. Growth of bryophytes in peatlands and peat accumulation.

4:00 JILL L. BUBIER. McGill University, Montreal, Canada. Relationships between bryophyte habitats and the emission of greenhouse gases in northern peatlands.

4:30 DALE H. VITT. University of Alberta, Edmonton, Canada. Changes in moss-dominated peatland communities over the past 10,000 years.

MONDAY EVENING, 2 AUGUST

5:15 **ABLS EXECUTIVE COUNCIL MEETING**

TUESDAY MORNING, 3 AUGUST

SESSION 3 **SYMPOSIUM:** Evolutionary Potential and the Reproductive Biology of Bryophytes and Lichens. Cosponsored by the Bryological and Lichenological Section, BSA. Organized by KAREN S. RENZAGLIA. Department of Biological Sciences, East Tennessee State University, Johnson City, TN 37614 (615/929-6930).

8:30 NEIL W. ASHTON. University of Regina, Regina, Saskatchewan, Canada. Insights into bryophyte evolutionary potential from experimentation with *Physcomitrella patens.*

9:15 D. NICHOLAS MCLETCHIE. University of Tennessee, Knoxville. Infertility and the potential of inbreeding while maintaining heterozygosity in the liverwort *Sphaerocarpos texanus.*

10:00 Recess

10:20 DIANA FAHSELT. University of Western Ontario, London, Ontario, Canada. Isozyme polymorphism and evolutionary potential in lichen populations.

11:05 PAULA T. DEPRIEST. Smithsonian Institution, Washington, DC. Molecular evolution and genetic variation in lichen-forming fungi.

11:50 KAREN S. RENZAGLIA. East Tennessee State University, Johnson City. Symposium summary and discussion.

TUESDAY AFTERNOON, 3 AUGUST

2:00 **ABLS BUSINESS MEETING**

3:30 **BUSINESS MEETING: BRYOLOGICAL & LICHENOLOGICAL SECTION, BSA**

TUESDAY EVENING, 3 AUGUST

6:00 **ABLS MIXER:** Jointly with Bryological & Lichenological Section, BSA. (Cash bar)

WEDNESDAY MORNING, 4 AUGUST

SESSION 4 **SYMPOSIUM:** Integration of Bryology and Lichenology into Biodiversity Preservation and Management Plans. Cosponsored by the Bryological and Lichenological Section, BSA. Organized by ROGER ROSENTRETER, Bureau of Land Management, 3380 Americana Terrace, Boise, ID 83706 (208/384-3064) and BARBARA CRANDALL-STOTLER, Department of Plant Biology, Southern Illinois University, Carbondale, IL 62901-6509 (618/453-3232).

9:00 DALE H. VITT* and YENHUNG LI. University of Alberta, Edmonton, Canada. Patterns in the diversity of bryophytes.

9:30 INES SASTRE-D. J.* and BENITO TAN. University of Puerto Rico, San Juan and Harvard University Herbarium, Cambridge, MA. Problems of bryophyte conservation in the tropics: neotropical and paleotropical cases.

10:00 Recess

10:15 JERRY A. SNIDER. University of Cincinnati, Cincinnati, OH. Preservation of bryophyte diversity: problems, practice and policy.

10:45 DOUGLAS LADD. The Nature Conservancy, St. Louis, MO. Conservation of bryo-lichen biodiversity: a Missouri perspective.

11:15 ROGER ROSENTRETER. Bureau of Land Management, Boise, ID. Fostering agency advocates for non-vascular plants.

11:45 BARBARA CRANDALL-STOTLER. Southern Illinois University, Carbondale. Closing comments.

WEDNESDAY AFTERNOON, 4 AUGUST

SESSION 5 **CONTRIBUTED PAPERS:** Lichen systematics and ecology; systematics of *Sphagnum*. Joint Session with the Bryological and Lichenological Section, BSA. BARBARA M. THIERS. New York Botanical Garden, Bronx, NY presiding (718/220-8622).

1:45 SAMUEL HAMMER. Harvard University, Cambridge, MA. The lichen genus *Cladonia* in the western United States.

2:00 IRWIN M. BRODO. Canadian Museum of Nature, Ottawa, Ontario, Canada. The crustose lichens of the Queen Charlotte Islands, British Columbia: observations on some new or interesting species.

2:15 MARIAN GLENN*, ANTONIO GOMEZ-BOLEA, CLAUDE ROUX and ROSE LOBELLO. Seton Hall University, South Orange, NJ, Universitat de Barcelona, Barcelona, Spain and Institut Méditerranéen d'Ecologie, Marseille, France. Lichen health in relation to vehicular traffic in two Mediterranean forest preserves.

2:30 STEVEN B. SELVA. University of Maine at Fort Kent, Fort Kent, ME. Lichen diversity and stand continuity in the ancient forests of New Hampshire and Vermont.

2:45 JAMES D. LAWREY. George Mason University, Fairfax, VA. Chemical ecology of a lichenicolous hyphomycete.

3:00 Recess

3:15 ALLEN C. RISK. University of Tennessee, Knoxville. *Sphagnum* of eastern Kentucky.

3:30 CYRUS B. MCQUEEN. Johnson State College, Johnson, VT. The *Sphagnum* flora of the Andes.

THURSDAY MORNING, 5 AUGUST

SESSION 6 **POSTER SESSION:** The biology of bryophytes and lichens. Joint Session with the Bryological and Lichenological Section, BSA. Posters will be available for viewing from 9:00 a.m. to 12:30. Authors will be available from 10:00 - 11:30 am.

ABLS KATHERINE A. GLEW. University of Washington, Seattle. Alpine lichen communities in Washington State.

ABLS ANTONIO GOMEZ-BOLEA*, MARIAN G. GLENN and ERNEST V. ORSI. Universitat de Barcelona, Barcelona, Spain and Seton Hall University, South Orange, NJ. Effects of environmental stress on the interaction of lichenized and non-lichenized fungi.

ABLS TERRY A. HEDDERSON*, RUSSELL L. CHAPMAN, DEBRA A. WATERS and BARBARA CRANDALL-STOTLER. Louisiana State University, Baton Rouge and Southern Illinois University, Carbondale. The phylogenetic position of *Takakia*: a preliminary assessment based on cladistic analysis of rRNA sequences.

ABLS ROBERT J. THOMAS*, TAIT A. NORDEN and HARRY A ROGOFF. Bates College, Lewiston, ME. Computer-assisted analysis of gravitropism in *Pellia*.

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Volume 10 Number 3

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The Grimmiaceae (Musci) in Maine.
I. *Coscinodon* and *Grimmia*

Bruce Allen[1]

The Grimmiaceae is a family of mostly small, erect, dark-green to black mosses. As primary colonizers predominantly found on bare rock they are markedly xerophytic, but a fair number of them also occur on rocks in and along streams or rivers. Occasionally they are found on rocks along the ocean shoreline; one species, *Schistidium maritimum*, is restricted to the seaside where it grows within reach of salt-water spray. The family typically has lanceolate leaves with small, thick-walled cells, poorly differentiated alar cells and a haplolepideous peristome, i.e. a single ring of teeth derived from the primary and inner peristomal layers and having a 2:3 peristomal pattern (Edwards 1979). As has been suggested by Murray (1984) and Churchill (1981, 1987) the Grimmiaceae can be divided into two major subgroups. These groups are here recognized as subfamilies: Grimmioideae (*Schistidium* and *Grimmia*) and Ptychomitrioideae (*Coscinodon*, *Jaffueliobryum*, *Coscinodentella*, *Indusiella*, *Aligrimmia*, *Racomitrium*, *Campylostelium*, and *Ptychomitrium*). All members of the Grimmioideae have short, smooth calyptrae while the Ptychomitrioideae have large, plicate calyptrae.

Adaptation to arid conditions has been a dominant evolutionary theme within the Grimmiaceae. For this reason its characters are prone to the convergent development of xeromorphological features. For example, all of Kawai's (1968) costal types (A-E) can be found throughout the Grimmiaceae. Interestingly, species with the less derived E-type costa (i.e. with the greatest degree of internal differentiated) are concentrated in the Ptychomitrioideae.

Peristome structure is extremely variable in Grimmiaceae. There are two very different peristome morphologies; but, the different types are linked by a continuum of intermediate forms. At one extreme are genera such as *Schistidium*, having peristomes with lanceolate teeth and no basal membrane. At the other extreme are genera such as *Ptychomitrium* and *Racomitrium*, with linear teeth and a basal membrane. Authors who have considered Grimmiaceae to be most closely related to Dicranaceae (Jones 1933, Churchill 1981) have considered the *Schistidium* type peristome to be primitive in the family, and the *Ptychomitrium-Racomitrium* type to be derived from *Schistidium*-like ancestors. However, peristomes of the *Ptychomitrium-Racomitrium* type are found in the Pottiaceae. Use of the Pottiaceae as the outgroup of the Grimmiaceae would suggest that evolution has proceeded in the opposite direction: from an ancestor with a *Ptychomitrium* type peristome.

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Key to the Maine species of *Coscinodon* and *Grimmia*

1. Leaf lamina biplicate, upper margins erect to incurved ...... 1. *Coscinodon cribrosus*
1. Leaf lamina plane, upper margins erect, plane or revolute .... 2.
    2. Leaves concave (in cross-section); setae cygneous.............. 6. *Grimmia olneyi*
    2. Leaves keeled (in cross-section); setae (where known) straight ... 3.
3. All basal leaf cells short-rectangular to quadrate; multicellular gemmae present on some leaves .... 4.
3. Basal leaf cells long-rectangular to elongate near costa; multicellular gemmae never present .... 5.
    4. Leaves 1.2-2.2 mm long, margins recurved on one side (rarely both) in lower 1/3; gemmae from basal leaf cells of otherwise normal leaves .... 5. *Grimmia hermannii*
    4. Leaves 2-3 mm long, margins recurved on both sides to 3/4 the leaf length; gemmae from apical leaf cells of short, blunt leaves .... 4. *Grimmia hartmanii*
5. Leaf margins plane, basal leaf cells near the costa straight-walled, basal marginal cells elongate and hyaline extending upward in a v-shaped pattern .... 3. *Grimmia donniana*
5. Leaf margins recurved at base on one or both sides, basal leaf cells near the costa sinuate, basal marginal cells short- rectangular to quadrate .... 6.
    6. Plants dioicous; setae 1 mm long, capsules immersed; leaf margins mostly recurved on both sides .... 7. *Grimmia pilifera*
    6. Plants autoicous; setae 2-3.5 mm long, capsules exserted, leaf margins recurved on one side .... 2. *Grimmia affinis*

Coscinodon Spreng.

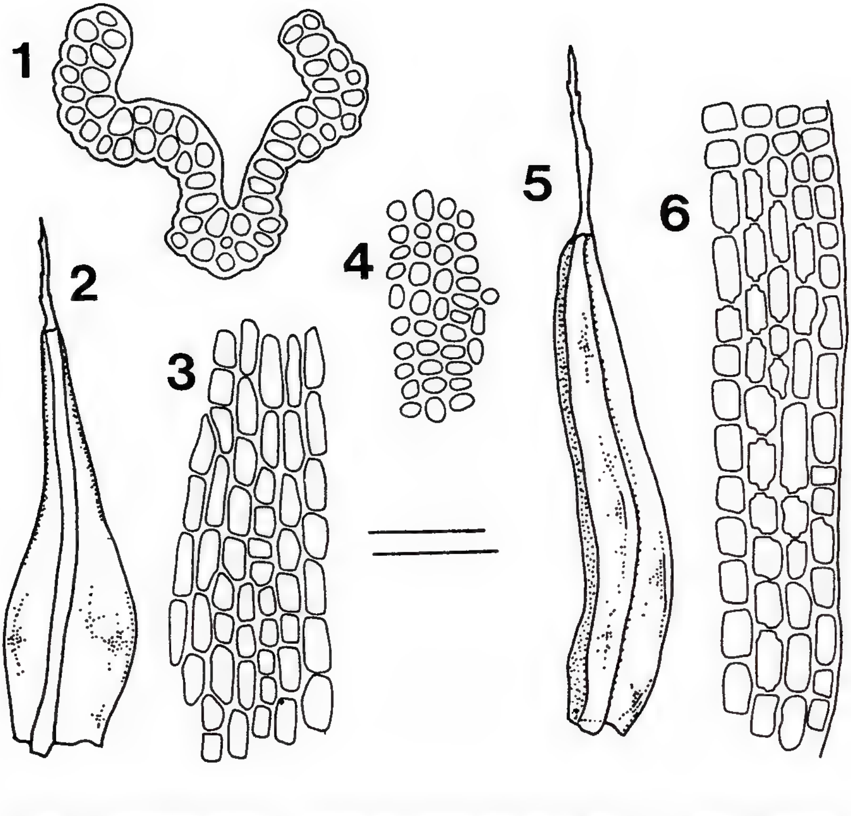
Leaves imbricate when dry; margins plane, erect or incurved; hair-points usually long and hyaline; basal cells rectangular or quadrate, smooth-walled. Capsules symmetric; setae straight; columella free from the lid and persistent; calyptrae large, covering most of the capsule, campanulate, mitrate or cucullate, plicate; peristome teeth cribrose.

Coscinodon differs from *Grimmia* in having a large, plicate, campanulate calyptra. *Grimmia*, however, exhibits great variation in calyptral-form, and for this reason the two genera are sometimes merged. As noted above the calyptra-form in *Coscinodon* is considered a feature that separates it not only from *Grimmia* but places *Coscinodon* in a different subfamily.

There is only one *Coscinodon* in Maine and its sporophytes are unknown from the region. Fortunately, recognizing the species is not difficult because of its distinctive, biplicate leaves.

1. ***Coscinodon cribrosus*** (Hedw.) Spruce, Ann. Mag. Nat. Hist. ser. 2, 3: 491. 1849.
Grimmia cribrosa Hedw. Sp. Musc. Frond. 76. 1801.

Plants small, blackish-green, to 5 mm high. Leaves 1-1.5 mm long, stiffly erect when dry, erect to erect-spreading when wet, ovate-lanceolate, biplicate above, acuminate, ending in a hyaline, serrulate hair point to 0.5 mm long; margins entire, plane below, erect to incurved above, bistratose above; concave in cross-section; costa prominent at back; upper cells 8-10 μm, bistratose in streaks, subquadrate to rounded-quadrate; basal cells 12-40 μm, subquadrate to short-rectangular, walls straight, firm-walled; basal cells near costa not elongate. Dioicous. Sporophytes not known from Maine.



Figures 1-6. *Coscinodon cribrosus*. 1. Cross-section through upper part of leaf. 2. & 5. Leaves. 3. Basal leaf cells near costa. 4. Upper leaf cells. 6. Basal leaf cells near margin. Scales in mm: top = 0.05 (1,3,4,6); bottom = 0.3 mm (2,5).

Setae 1-1.5 mm long, straight; capsules 1 mm long, immersed to slightly emergent, erect and symmetric, oblong-cylindric to obovoid; peristome lanceolate, cribrose throughout. Calyptra large, mitrate or cucullate, plicate. (Sporophytic description taken from western United States material).

On dry, bare, exposed rock ledges and cliffs. In Maine known from Knox (*Allen & Allen 6044* MO) and Oxford (*Adams 14176* MAINE) counties.

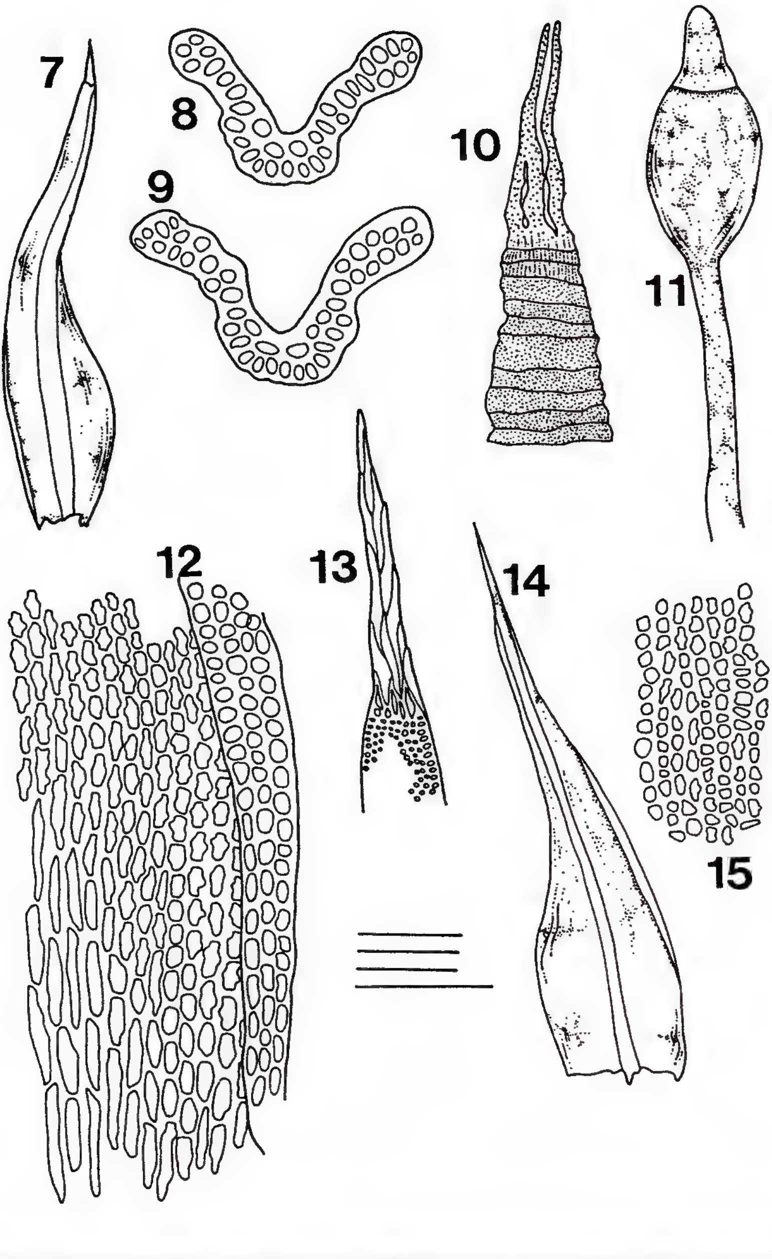
Coscinodon cribrosus is not easily collected because of its small size and tight adherence to bare rock. It is likely to be more common in Maine than the above records suggests and should be looked for on exposed rocks and cliffs on mountains and hilltops. The species has concave leaves with erect to incurved upper leaf margins. It is the only Maine Grimmiaceae with biplicate leaves. The leaves have involute margins and a deeply channeled costa which makes the leaf plicate difficult to see on whole leaves. They are best seen in leaf cross-sections.

Grimmia Hedw.

Leaves imbricate, appressed, flexuous, erect or incurved, twisted to spirally contorted (rarely crispate) when dry, ovate-lanceolate, oblong-lanceolate or lanceolate, keeled or concave, margins plane, erect, incurved or recurved, hyaline hair-points present or absent, basal cells elongate, rectangular or quadrate, sinuate or smooth-walled. Capsules immersed, emergent or exserted, ovoid to cylindrical, symmetrical or asymmetrical and ventricose, smooth or striate; seta straight or cygneous; columella free from the lid and persistent; calyptrae small, cucullate or mitrate; peristome teeth papillose, entire, cleft, cribrose or absent.

In the field most *Grimmias* look much the same. The plants are small, blackish-green and nearly always found on bare rock. The leaves are generally ovate-lanceolate, imbricate when dry, have a strong, single costa, small, thick-walled upper leaf cells and lack alar cell differentiation. Useful taxonomic features are found in the cross-sectional shape of the leaves (keeled vs. concave), leaf margins (plane, recurved, or incurved), lamina (unistratose, bi- or multistratose), and basal leaf cells (sinuate or straight-walled; elongate, short rectangular or quadrate).

The *Grimmia* sporophyte has distinctive features that have been used to delimitate subgeneric (Loeske 1930, Jones 1933) or generic groups (Churchill 1981). Especially important characters are setae orientation (straight, flexuose, arcuate or cygneous) and capsule form (erect and symmetric vs. ventricose and asymmetric). The groups defined by these sporophytic characters appear to represent monophyletic assemblages, but nearly half the species are dioicous and rarely produce sporophytes. From a practical point of view it seems best to recognize them as subgeneric units.



Figures 7-15. *Grimmia affinis*. 7. & 14. Leaves. 8. Cross-section through upper part of leaf. 9. Cross-section through median part of leaf. 10. Peristome tooth. 11. Seta, capsule and operculum. 12. Basal leaf cells. 13. Leaf hairpoint. 15. Upper leaf cells. Scales in mm: top = 0.05 (8,9,10,12,15); subtop = 0.1 (13); sub-bottom = 0.5 (11); bottom = 0.5 (7,14).

1. ***Grimmia affinis*** Hoppe & Hornsch. *ex* Hornsch., Flora 2: 85. 1819.

Plants small to medium, blackish-green, to 15-30 mm high. Leaves 1.5-2.5 mm long, erect to erect-patent when dry, erect-spreading when wet, ovate-lanceolate, ending in hyaline, weakly serrulate hair points to 0.3 mm long; margins entire, recurved on one side below, plane above, bi- to multistratose above; keeled in cross-section; costa prominent at back; upper cells 8-16 μm, bistratose, irregularly rounded, oval or short rectangular, more or less sinuose; basal cells 14-32 μm, linear to short rectangular or quadrate, walls sinuose, incrassate; basal cells near costa elongate. Autoicous. Setae 2-3 mm long, straight or weakly flexuous; capsules 1-1.2 mm long, shortly exserted, erect to suberect, symmetric, ovoid to ellipsoid; opercula stoutly rostrate to conic; peristome teeth lanceolate, entire, densely papillose. Calyptrae cucullate, subcucullate or irregularly and weakly mitrate, 2 mm.

On bare, granitic rocks and boulders. In Maine known from Hancock (*Wynne 101* NY) county.

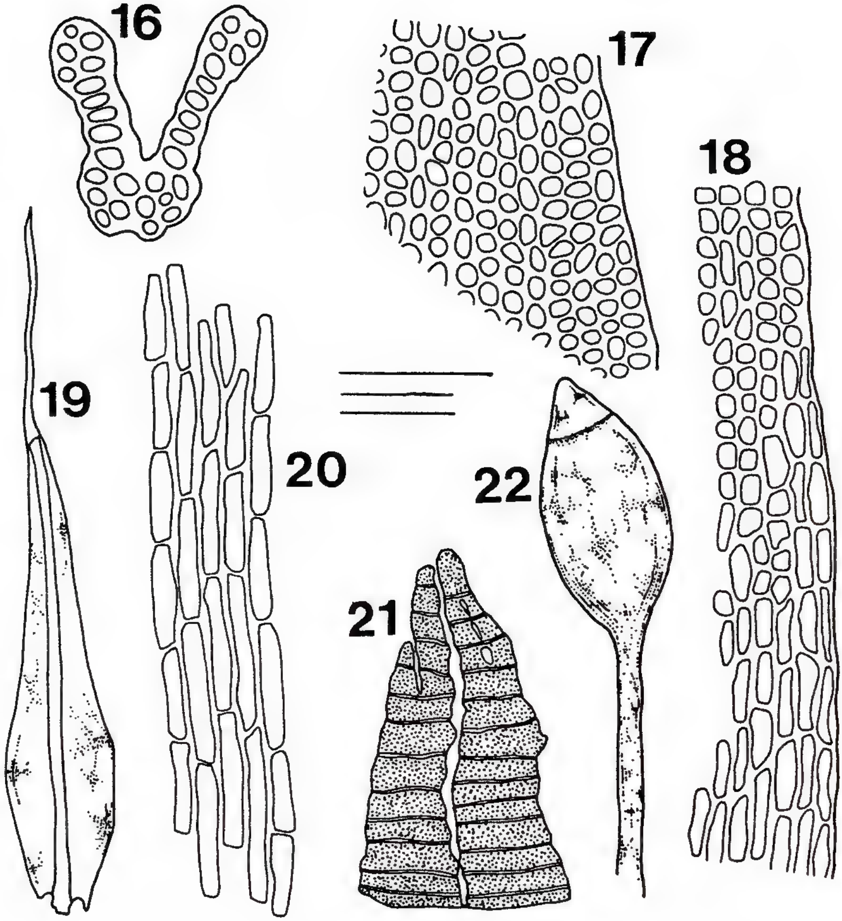
Grimmia affinis has keeled, ovate-lanceolate leaves that are narrowly recurved along the lower margins on one side. Its basal cells are elongate and sinuous near the costa, but quadrate to short-rectangular and straight-walled along the margins. *Grimmia donniana* differs from it in having plane leaf margins and long, lax cells throughout the leaf base. In addition its basal leaf cells extend upward along the leaf margins farther than the inner cells forming a v-shaped pattern. The gametophytes of *G. pilifera* are very similar to those of *G. affinis*. It differs only in having most leaves narrowly recurved on both margins and a dioicous sexual condition. The immersed capsules of *Grimmia pilifera* also distinguishes the two species.

2. ***Grimmia donniana*** Sm., Brit. Fl. 3: 1804.

Plants small, greenish-black, to 7 mm high. Leaves 1.5-2 mm long, erect-flexuous to incurved and contorted when dry, erect-spreading when wet, lanceolate, ending in hyaline, entire to serrulate hair points to 500 μm long; margins entire, plane below and above, bistratose above; keeled in cross-section; costa prominent at back; upper cells 8-12(-18) μm, bistratose above, quadrate, rounded to short-rectangular; basal cells 38-80 μm, long-rectangular, walls straight, lax-walled; basal cells near costa elongate, those at the margins extending upwards forming a v-shaped pattern. Autoicous. Setae 1.5-3 mm long, straight; capsules 1 mm long, emergent to shortly exserted, erect and symmetric, oval to oblong; opercula bluntly conic, to 200 μm; peristome teeth lanceolate, perforate at tips, papillose. Calyptrae cucullate, 1.5-2 mm long.

On rocks and boulders at high elevations. In Maine known from Piscataquis (*Lowe* MAINE) and Somerset (*Adams 13573* MAINE) counties.

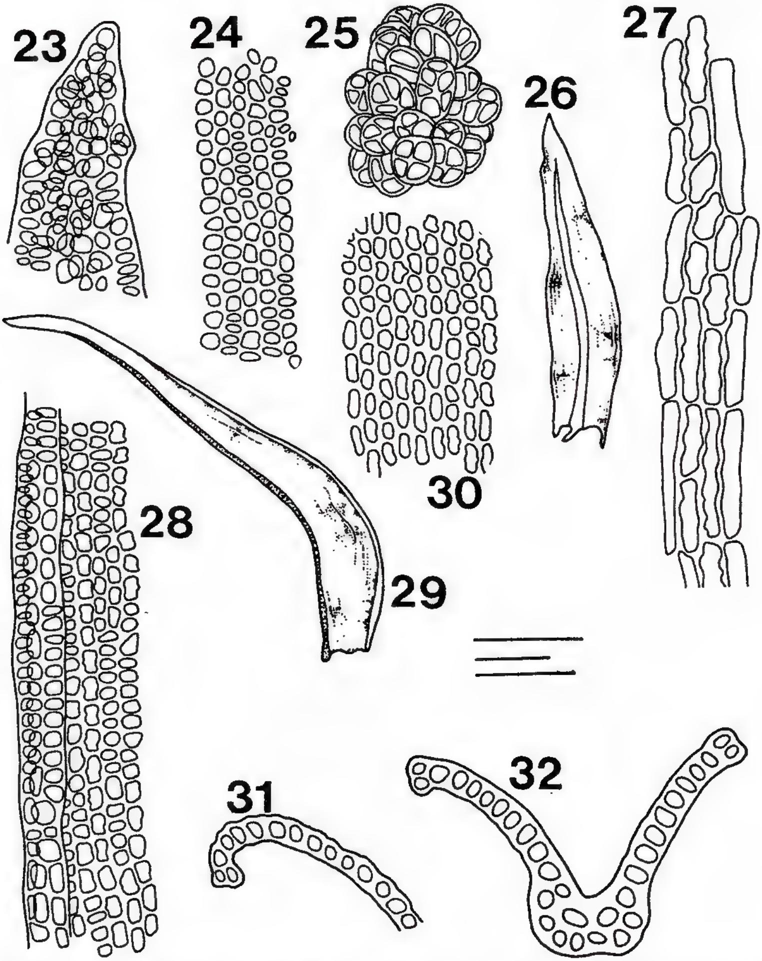
Grimmia donniana has keeled leaves with plane margins and long, lax-walled basal cells that extend upward in a v-shaped pattern along the basal margins farther than the inner cells. *Grimmia hermannii* may have lax-walled basal leaf cells but its basal cells are quadrate to short rectangular and its leaf margins are recurved.



Figures 16-22. *Grimmia donniana*. 16.Cross-section through upper part of leaf. 17. Upper leaf cells. 18 Basal leaf cells near margin. 19. Leaf. 20. Basal leaf cells near costa. 21 Peristome teeth. 22. Seta, capsule, operculum. Scales in mm: top = 0.5 (19); middle = 0.5 (22); bottom = 0.05 (16-18,20,21).

3. ***Grimmia hartmanii*** Schimp., Syn. 214. 1860.

Plants large to medium, dark-green to yellow green, 1-3 cm high. Leaves 2-3 mm long, firm, erect below, patent to incurved above when dry, erect-patent to erect-spreading when wet, lanceolate, broadly acute to acuminate, occasionally ending in a hyaline, serrulate hair point; margins entire, recurved on both sides below, at times recurved to near the apex, bistratose at margins above; strongly keeled in cross-section; costa prominent at back; upper cells 6-9 μm, rounded-quadrate to oblong, occasionally



Figures 23-32. *Grimmia hartmanii*. 23. Leaf apex. 24. Upper leaf cells. 25. Gemma. 26. Gemmae-bearing leaf. 27. Apical leaf cells of gemmae-bearing leaf. 28. Basal leaf cells near margin. 29. Leaf. 30. Basal, median leaf cells. 31. Cross-section showing basal leaf margin. 32. Cross-section through upper part of leaf. Scales in mm: top = 0.05 (23,24,27,28,30-32); middle = 0.05 (25); bottom = 0.5 (26,29).

short-rectangular, wavy to sinuose; basal cells 10-17 μm, oblong to short rectangular, walls strongly sinuose, firm-walled; basal cells near costa somewhat enlarged not distinctly elongate. Dioicous. Gemmae globose, multicellular, orange-brown to red-brown, produced in clusters at tips of short blunt leaves at ends of stems and branches. Upper cells of gemmae-bearing leaves hyaline, lax, narrowly-elongate. Sporophytes not known from eastern North America.

On granitic rocks. In Maine known from Oxford (*Lowe* MAINE) county.

This is the only Maine *Grimmia* with globose, multicellular gemmae found on the tips of short, blunt leaves. The gemmae arise from linear, thin-walled, upper leaf cells. The leaf margins of *G. hartmanii* may be recurved to near the apex and the juxtacostal basal cells are short. Crum & Anderson (1981) report hyaline leaf tips in this species, but the only Maine collection is epilose.

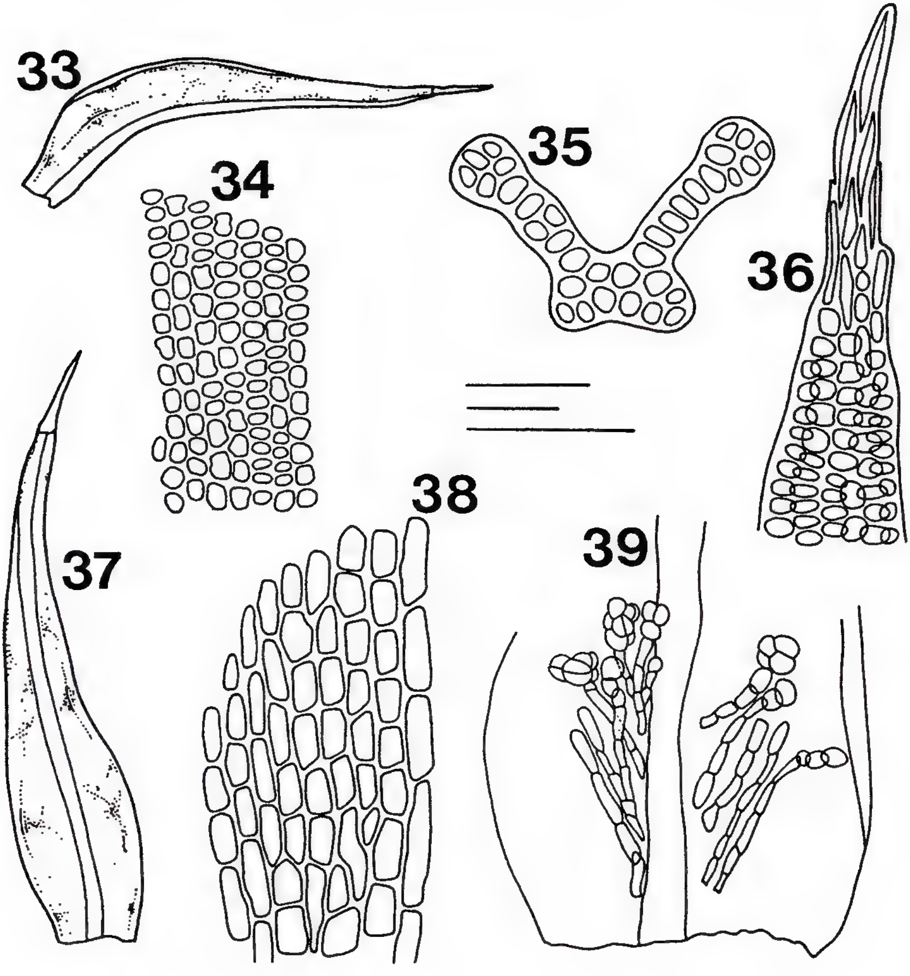
Grimmia hartmanii has the same habit, prominently keeled, lanceolate leaves and extensively recurved leaf margins as *Schistidium rivularis*. *Schistidium rivularis* differs in having enlarged perichaetial leaves, immersed capsules and a columella that is attached to the operculum and so shed during capsule dehiscence. When sporophytes or globose gemmae are absent, the two species are difficult to distinguish. A re-examination of sterile *Schistidium rivularis* in North American herbaria may find *Grimmia hartmanii* to be more common in eastern North America than is presently thought.

4. ***Grimmia hermannii*** Crum, Michigan Bot. 13: 171. 1974.

Plants small, blackish-green to green, to 4 mm high. Leaves 1-1.5(-2) mm long, erect-appressed to erect-patent when dry, patent to erect-spreading when wet, lanceolate, ending in a short hyaline, serrulate hair point to 0.3 mm long; margins entire, plane or recurved on one side (at times on both sides) below, plane, multi- to bistratose above; keeled in cross-section; costa prominent, at times winged at back; upper cells 6-10 μm, irregularly bistratose above, quadrate, incrassate, sinuose; basal cells, 12-40 μm, quadrate to rectangular, walls straight, lax or firm-walled; basal cells near costa short, not much differentiated. Dioicous (only perichaetia observed). Gemmae globose, multicellular, green to greenish-red, produced on short stalks from basal leaf cells. Sporophytes unknown.

On bare, granitic boulders and rock outcrops. In Maine known from Kennebec (*Allen 14779* MO), Oxford (*Parlin 15706* MAINE), and Waldo (*Allen 10358* MO) counties.

Grimmia hermannii differs from other Maine *Grimmia* in having multicellular gemmae clustered at the leaf bases. The gemmae arise from basal leaf cells on both sides of otherwise normal vegetative leaves. *Grimmia hartmanii* has gemmae similar

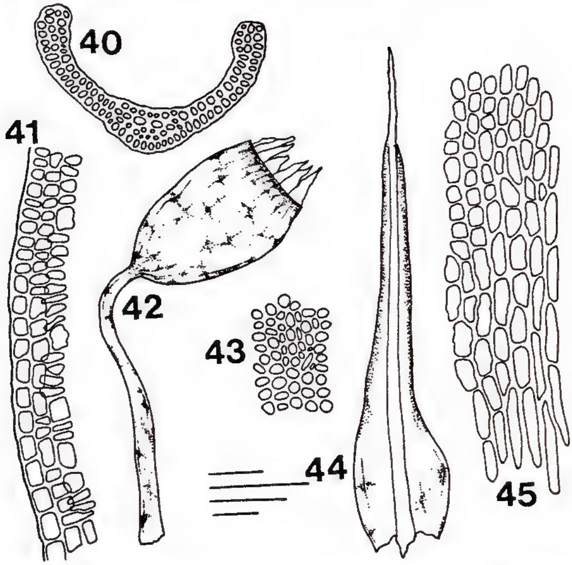


Figures 33-39. *Grimmia hermannii*. 33. & 37. Leaves. 34. Upper leaf cells. 35. Cross-section through upper part of leaf. 36. Leaf apex. 38. Basal leaf cells near costa. 39. Lower, dorsal part of leaf showing gemmae and gemmae filaments. Scales in mm: top = 0.05 (34-36,38); middle = 0.1 (39); bottom = 0.5 (33,37).

in shape, but they are found on the apical cells of specialized leaves. Although Crum (1974) described the gemmae in *G. hermannii* as axillary, all Maine material as well as material from Michigan (*Hermann 28581* NY) have gemmae associated with basal leaf cells. Most leaves of *G. hermannii* have short, firm-walled basal cells. In some leaves the basal cells are lax- to thin-walled and it is from these cells that gemmae arise. *Grimmia donniana* also has lax- to thin-walled basal cells. It differs from *G. hermannii* in having elongate basal cells and plane leaf margins. In addition, *G. donniana* is autoicous and commonly has sporophytes.

5. ***Grimmia olneyi*** Sull. *in* Sull. & Lesq., Musci Bot. Am. 32.

Plants small, dark-green above, brown to black below, 1-2 mm high. Leaves 2-4 mm long, erect or weakly erect-incurved and channeled above when dry, erect at base, erect-spreading above when wet, linear-lanceolate from an ovate base, ending in a hyaline, spinulose hair point to 1 mm long; margins entire, plane below, erect above, 2-3 stratose above; concave in cross-section; costa not prominent at back; upper cells 6-9 μm, more or less bistratose, irregularly rounded, incrassate; interior basal cells 15-30 μm, oblong to rectangular, straight or weakly sinuose, firm-walled; basal cells near costa elongate, to 40 μm long. Dioicous. Setae 3-4 mm long, cygneous; capsules 1.5-2 mm long, exserted, erect and symmetric, oblong to oblong-cylindric; opercula obliquely rostrate; peristome teeth lanceolate, entire. Calyptrae subcucullate, deeply lobed but with one incision longer than the others, 2 mm long.



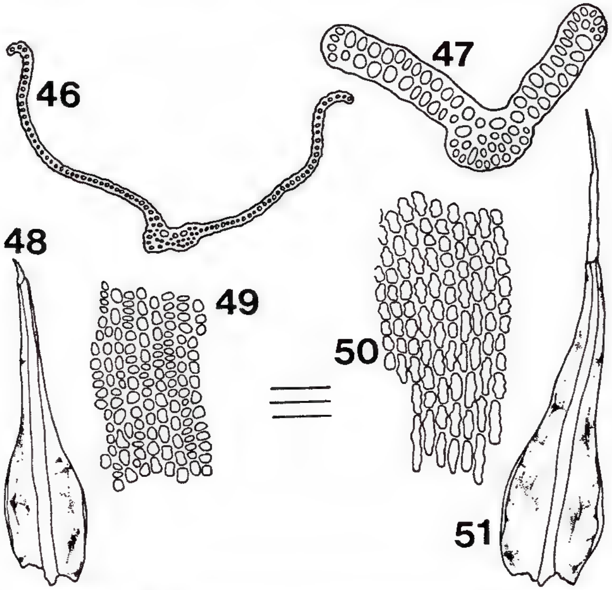
Figures 40-45. *Grimmia olneyi*. 40. Cross-section through upper part of leaf. 41. Basal leaf cells near margin. 42. Seta, capsule, peristome teeth. 43. Upper leaf cells. 44. Leaf. 45. Basal leaf cells near costa. Scales in mm: top = 0.5 (44); sub-top = 0.1 (40); sub-bottom = 0.05 (41,43,45); bottom = 0.5 (42).

On rock ledges, along rivers or streams. In Maine known Androscoggin (*Parlin 11293* MAINE), Hancock (*Dunham* MAINE), and Sagadahoc (*Lowe* MAINE) counties.

This species is distinguished by its concave leaves and cygneous setae. The leaves of *Coscinodon cribrosus* are also concave, but that species has biplicate leaves. There are several *Grimmia* species with concave leaves that may be found in Maine. Most of these species lack the combination of erect upper leaf margins, long hair-pointed leaves, and costae flat at back. However, *G. laevigata*, reported from Quebec (Ireland et al. 1987), has all of these features. It differs in having straight setae, wider leaves and broadly, decurrent hyaline hair-points. In addition the leaves when dry are flattened rather than channeled.

6. ***Grimmia pilifera*** P.-Beauv., Prodr. Aethéog. p.58. 1805. *Grimmia pensilvanica* Schwaegr., Suppl. Sp. Musc. 1(1): 91. 1811.

Plants medium to large, dark green to greenish-black to 20 mm high. Leaves 3-5 mm long, erect-appressed when dry, erect-patent to erect-spreading when wet, ovate-lanceolate, ending in a short or long hyaline, serrulate hair-point to 2.5 mm long; margins entire, recurved on one or both sides, erect and bi- to multistratose above; keeled in cross-section; costa prominent at back; upper cells 6-14 μm, usually bistratose throughout, rounded to oval occasionally oblong, incrassate, frequently



Figures 46-51. *Grimmia pilifer*. 46. Cross-section through lower part of leaf. 47. Cross-section through upper part of leaf. 48. & 51. Leaves. 49. Upper leaf cells. 50. Basal leaf cells. Scales in mm: top = 0.5 (48,51); middle = 0.1 (46); bottom = 0.05 (47,49,50).

sinuose; basal cells to 54 μm, rectangular to elongate, sinuose, incrassate; juxtacostal basal cells not much differentiated. Dioicous. Setae to 1 mm long, straight; capsules 1.5-2.0 mm long, immersed, erect and symmetric, oblong; opercula subulate; peristome teeth lanceolate, cribrose above. Calyptrae mitrate, lobed at base.

On granitic boulders and rock outcrops. In Maine verified from Cumberland (*Lowe* MAINE) county and reported by Parlin (1939) from Androscoggin, Kennebec and Oxford counties.

Grimmia pilifera has long-awned, ovate-lanceolate leaves that are keeled and bistratose above. *Grimmia donniana* differs in having elongate, lax-walled basal leaf cells that extend upward along the plane basal leaf margins in a v-shaped pattern. The leaf margins in *G. pilifera* are generally recurved on one or both sides, but occasionally some leaves may be plane to erect throughout. *Grimmia affinis*, an autoicous species with exserted capsules, is gametophytically similar. Recognizing sterile collections of *G. pilifera* depends entirely on finding some leaves with leaf margins revolute on both sides.

Acknowledgments. I thank the curators of MAINE for the loan of material and Alan Whittemore for his views on the Grimmiaceae.

Literature Cited.

Churchill, S. P. 1981. A phylogenetic analysis, classification and synopsis of the genera of the Grimmiaceae (Musci), pp. 127-144. *In* V. A. Funk & D. R. Brooks (eds.), *Advances in Cladistics*. New York.

_____ . 1987. Systematics and biogeography of *Jaffueliobryum* (Grimmiaceae). *Memoirs of the New York Botanical Garden* 45: 691-708.

Crum, H. 1974. A new *Grimmia* from Michigan's Upper Peninsula. *Michigan Botanist* 13: 171-174.

_____ & L. E. Anderson. 1981. *Mosses of eastern North America*. Volume 1. Columbia University Press. New York.

Ireland, R. R., G. R. Brassard, W. B. Schofield & D. H. Vitt. 1987. Checklist of the mosses of Canada II. *Lindbergia* 13: 1-62.

Jones, G. N. 1933. Grimmiaceae. *In* A. J. Grout (ed.), *Moss Flora of North America North of Mexico* 2(1): 1-65.

Loeske, L. 1930. Monographie der Europäischen Grimmiaceen. *Bibliotheca Botanica* 101: IX + 1-236.

Murray, B. M. 1984. A revision of the monotypic genera *Indusiella*, *Aligrimmia* and *Coscinodontella* (Musci: Grimmiaceae), with comments on convergent xeromorphological features. *Bryologist* 87: 24-36.

Parlin, J. C. 1939. Some Maine lichens, hepatics and mosses. *Bulletin Josselyn Botanical Society Maine* 7: 30-59.

A preliminary list of mosses from Bienville National Forest, Mississippi

William R. Buck[1] & Lewis E. Anderson[2]

During a recent trip in the Southeast, we had the good fortune to visit the Bienville National Forest in eastern Mississippi. The National Forest Service was particularly helpful in suggesting collecting sites, and even guided us through the Bienville Pines Scenic Area. We collected in five different sites in the Bienville National Forest, in three counties. Because the moss flora of Mississippi is so poorly documented, and because the National Forest Service was so generous with their assistance, we are listing the collections we made in the Bienville National Forest during our trip. We hope that the following list will be of use to moss floristicians in the southeastern United States, and to the National Forest Service, as a partial repayment for their generosity.

The one area in which we collected most intensively was the Bienville Pines Scenic Area. This 189 acre tract of virgin loblolly (*Pinus taeda*) and shortleaf (*P. echinata*) pines with a southern mixed hardwoods understory is the largest of its kind in Mississippi. Jones (1971) called attention to the area and suggested that it is worthy of ecological study. We, therefore, took both of the trails through the forest with the intent of surveying, as thoroughly as possible in our limited time, the mosses within this unique Mississippi habitat. Other localities were surveyed less intensively, but included several very different habitats.

The precise locality data for our collecting sites is as follows. The numbers will identify the sites in the subsequent taxonomic list.

1. Mississippi. Scott County: Bienville National Forest, Bienville Pines Scenic Area, ca. 1.5 mi SSE of Forest, ca. 32°21'N, 89°28'W, ca. 100 m; old growth pine forest with scattered hardwoods; 29 September 1992.
2. Mississippi. Scott County: Bienville National Forest, Caney Creek Wildlife Management Area, along Forest Service Road 518, 1 mi E of County Road 501, ca. 32°21'N, 89°28'W, ca. 100 m; hardwood/pine forest along stream; 29 September 1992.
3. Mississippi. Smith County: Bienville National Forest, Marathon Lake Recreation Area, ca. 32°12'N, 89°22'W; oak-pine woods on W shore of lake; 30 September 1992.
4. Mississippi. Jasper County: Bienville National Forest, County Road 506 at Little Tallahala Creek, 2.1 mi W of County Road 507, ca. 32°12'N, 89°19'W, ca. 35 m; mesic hardwoods along stream; 30 September 1992.
5. Mississippi. Jasper County: Bienville National Forest, Forest Service Road 506-3 at eastern edge of national forest, ca. 32°12'N, 89°13'W, ca. 105 m; dry, oak woods on sand; 30 September 1992.

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[2] Department of Botany, Duke University, Durham, NC 27706-2584

The nomenclature in the following list follows Anderson et al. (1990). The collections by Buck are deposited at NY, and those by Anderson are at DUKE.

Ditrichaceae
Ditrichum pallidum (1: Buck 22006; 3: Buck 22075)
Dicranaceae
Campylopus tallulensis (2: Anderson 26656)
Dicranum condensatum (3: Anderson 26667, Buck 22066; 4: Anderson 26693; 5: Anderson 26704, Buck 22115)
D. scoparium (3: Anderson 26673, Buck 22081)
Leucobryaceae
Leucobryum albidum (1: Anderson 26644, Buck 22027; 3: Anderson 26665, Buck 22085; 5: Anderson 26696, Buck 22122)
Fissidentaceae
Fissidens adianthoides (1: Anderson 26653, Buck 22015; 2: Anderson 26658)
F. bryoides (4: Anderson 26684, Buck 22088)
F. dubius (1: Anderson 26641, Buck 22009, 22023; 2: Anderson 26657; 3: Buck 22069)
F. ravenelii (1: Buck 22045, 22048; 4: Buck 22100; 5: Buck 22108)
F. subbasilaris (1: Anderson 26663, Buck 22031)
F. taxifolius (1: Anderson 26655, Buck 22043)
Pottiaceae
Barbula unguiculata (3: Anderson 26669, Buck 22086)
Tortella humilis (1: Buck 22016, 22028; 5: Anderson 26694)
Weissia controversa (3: Buck 22067; 5: Buck 22117, 22125)
Ptychomitriaceae
Ptychomitrium drummondii (3: Buck 22080)
Ephemeraceae
Ephemerum crassinervium (1: Buck 22049; 4: Buck 22098)
Micromitrium megalosporum (2: Buck 22053)
Funariaceae
Funaria serrata (1: Buck 22007)
Mniaceae
Plagiomnium ciliare (1: Anderson 26650, Buck 22013; 4: Buck 22099)
Aulacomniaceae
Aulacomnium palustre (3: Anderson 26676, 26677, Buck 22062, 22071)
Orthotrichaceae
Drummondia prorepens (1: Anderson 26634)
Fontinalaceae
Fontinalis novae-angliae (1: Anderson 26648, 26649, Buck 22014, 22025; 2: Buck 22054)
Climaceaceae
Climacium kindbergii (1: Anderson 26654, Buck 22035)
Anomodontaceae
Anomodon attenuatus (1: Anderson 26642, Buck 22022; 3: Anderson 26682; 4: Anderson 26685, 26688, Buck 22095)
A. minor (4: Anderson 26687, Buck 22094)
A. rostratus (2: Anderson 26662)
Haplohymenium triste (5: Anderson 26697, Buck 22120)

Cryphaeaceae
Cryphaea glomerata (1: Buck 22040; 3: Anderson 26680, Buck 22084; 4: Anderson 26691, Buck 22096; 5: Buck 22123)
C. nervosa (4: Buck 22090)
Leptodontaceae
Forsstroemia trichomitria (1: Buck 22008; 4: Anderson 26689, Buck 22093)
Leucodontaceae
Leucodon julaceus (1: Anderson 26636, Buck 22037; 2: Anderson 266613: Buck 22082; 3: Anderson 26678; 4: Buck 22092; 5: Anderson 26700)
Theliaceae
Thelia hirtella (1: Anderson 26635, Buck 22017; 2: Anderson 26660; 3: Anderson 26681, Buck 22087; 4: Anderson 26690, Buck 22102; 5: Buck 22112)
T. lescurii (5: Anderson 26702, Buck 22107, 22116)
Fabroniaceae
Clasmatodon parvulus (1: Anderson 26645, Buck 22024, 22039; 3: Buck 22065; 4: Buck 22104; 5: Anderson 26705)
Thuidiaceae
Thuidium allenii (3: Buck 22064)
T. delicatulum (1: Anderson 26643, Buck 22042; 3: Anderson 26668, Buck 22072)
Helodiaceae
Helodium paludosum (3: Anderson 26675, Buck 22061, 22063, 22070)
Amblystegiaceae
Amblystegium varium (4: Anderson 26692)
Campylium chrysophyllum (3: Anderson 26679, Buck 22058)
C. hispidulum (1: Anderson 26637, Buck 22044; 5: Anderson 26703, Buck 22121)
Brachytheciaceae
Brachythecium acuminatum (1: Anderson 26664, Buck 22038)
Bryoandersonia illecebra (3: Anderson 26671, Buck 22068)
Eurhynchium hians (4: Anderson 26686, Buck 22103)
E. pulchellum (5: Buck 22111)
Homalotheciella subcapillata (1: Anderson 26646, Buck 22010, 22019, 22026; 2: Anderson 26659; 5: Buck 22110)
Steerecleus serrulatus (1: Anderson 26647, Buck 22050; 3: Buck 22074; 5: Anderson 26699, Buck 22124)
Entodontaceae
Entodon seductrix (1: Buck 22051; 2: Buck 22052; 3: Anderson 26666, Buck 22083; 5: Anderson 26701, Buck 22114, 22119)
Sematophyllaceae
Sematophyllum adnatum (1: Anderson 26639, Buck 22046; 5: Anderson 26695, Buck 22118)
Hypnaceae
Hypnum lindbergii (3: Anderson 26670, 26674, Buck 22059, 22060, 22073; 4: Anderson 26683, Buck 22101)
Isopterygium tenerum (1: Anderson 26640, Buck 22020, 22041; 3: Buck 22057; 4: Buck 22105; 5: Buck 22109)
Platygyrium repens (5: Anderson 26698, Buck 22113)

Polytrichaceae
Atrichum altecristatum (1: Buck 22032; 3: Buck 22076)
A. angustatum (1: Anderson 26652, Buck 22036; 5: Buck 22126)
Polytrichum commune (3: Anderson 26672)
P. pallidisetum (3: Buck 22078)

We particularly thank Forest Ranger Dean Elsen who spent most of his day with us, guiding us through the Bienville Pines Scenic Area and adjacent sites. Bruce Allen named our *Fontinalis* collections.

Literature Cited

Anderson, L. E., H. A. Crum & W. R. Buck. 1990. List of the mosses of North America north of Mexico. *Bryologist* 93: 448-499.
Jones, S. B., Jr. 1971. A virgin prairie and a virgin loblolly pine stand in central Mississippi. *Castanea* 36: 223-225.

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Hypotrachyna costaricensis New to North America

Richard C. Harris[1]

Hypotrachyna costaricensis (Nyl. in Polakowsky) Hale, characterized by the presence of isidia, a rather thick layer of densely dichotomously branched rhizines, and fatty acids in the medulla, has been found in central Alabama. Most species of *Hypotrachyna* in North America are found at high altitudes in the Appalachians and occur at similar altitudes in the Caribbean and South America. According to Hale (1975), *H. costaricensis* is common in the Neotropics and is also found in Southeast Asia and is said to grow "...in scrub forests, secondary cloud forests, and coffee plantations at 1000-3500 m elevation." In my own experience it often occurs in non-montane situations, e.g., Puerto Rico, that has no montane zone. Thus, the collection from a relatively low elevation in Alabama is not entirely anomalous.

The discovery of *H. costaricensis* is a fine example of unalloyed serendipity. Lewis Anderson, Bill Buck, and I were ending a collecting trip in Mississippi, had spent the night in Tuscaloosa, and were looking for a site for a quick stop before embarking on the long drive to Athens, Georgia. The only other criterion was a habitat that might have *Sphagnum* for Anderson. In the normal course I probably would never have collected at such a place. If asked for a single word to describe it, "scruffy" would come to mind. It was a somewhat disturbed swamp forest dominated by rather widely spaced red maple with a thick growth of shrubs. The lichens in the field looked distinctly weedy. Such a habitat is, however, in line with those noted above for the species. This discovery is a humbling reminder that preconceptions as to "good" collecting areas may have no relation to reality and, once again, emphasizes how little is known about North American lichens.

The collecting locality was as follows:

> **ALABAMA**. Bibb County: Talladega National Forest, Oakmulgee Wildlife Management Area, Reed Brake Research Natural Area, along Forest Service Rd. 726 at South Sandy Creek, 37°57'N, 87°22'W, on *Acer rubrum*, 1 Oct 1992, *Harris 28915* (NY).

Literature Cited

Hale, M. 1975. A revision of the lichen genus *Hypotrachyna* (Parmeliaceae) in tropical America. *Smithsonian Contr. Bot.* 25: 1-73.

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A Checklist of the Hepaticae and Anthocerotae of Eastern Suffolk County, Long Island, New York

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Abstract. *Seventy-three species of liverworts and hornworts are reported from eastern Long Island, New York. Although no additional taxa were added to the state list, thirty species are published for the first time from the region. Special emphasis is given to the sixty-six hepatic taxa based upon the collections of Roy Latham.*

Long Island is the southernmost land mass of New York State. The island is bordered along the north shore by Long Island Sound and the south shore running contiguous with the Atlantic Ocean. It has been suggested that during the Wisconsin Glaciation many boreal plants survived in the pine barrens of New Jersey (Brodo, 1968). During the retreat of the ice, these species were in an excellent position to invade the Coastal Plain of Long Island. The island is somewhat evenly divided between the oak forests and hilly, glacial moraines along the north shore of the island and the rather flat, sandy pine barrens topography of the south shore. Suffolk County extends 128 km from west to east and is about 32 km wide. The elevation ranges from sea level to 130 meters.

This survey of the hepatic flora of the eastern two-thirds of the island, is restricted to the townships of Brookhaven, East Hampton, Riverhead, Shelter Island, Southampton, and Southold. *Sphagnum* and native cranberry bogs (*Vaccinium macrocarpon* Ait.) that are frequent in the depressions along the beach dunes at Napeaque and Montauk Point in East Hampton Town supported particularly interesting hepatic communities which were extensively studied by R. M. Schuster (1969, 1974).

The most comprehensive collections of hepatics from Long Island was accumulated by the eminent naturalist Roy Latham (1881-1979) of Orient, New York. Initially, 40 species were reported from Southold Town and Gardiner's Island (Burnham & Latham, 1914-25). During that period Latham published a short paper regarding the first discovery of *Cladopodiella francisci* (Hook.) Joerg. in New York State (Latham, 1917). Latham later expanded his collecting to include all of eastern Suffolk County and succeeded in finding an additional 26 taxa as yet unreported from the region. Many of these specimens were determined in duplicate by G. H. Conklin and are deposited in the hepatic herbarium of the Sullivant Moss Society (ABSH) and in the bryophyte herbarium at the New York State Museum (NYS). Other specialists, including Andrews, Evans, and Fulford, also verified Latham's collections. There were, however, several packets mislabelled and two species that were erroneously published by Latham (Burnham & Latham 1921 & 1923). *Calypogeia sphagnicola* (Arn. et Perss.) Warnst. et Loeske (Latham s.n., 10 Oct 1920) is represented by a single strand of *Calypogeia* sp., "on wet sand" at Laurel Lake, Southold Town and could not be determined by N. G. Miller. *Cephalozia loitlesbergeri* Schiffn. was

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apparently misidentified by Andrews and according to Schuster (1974, p. 797) this species is restricted to the "Spruce-Fir forest region." (The only fertile specimen examined (Latham 33939) contained perianths belonging to *C. lunulifolia* (Dum.) Dum.) Miller reexamined the specimen of *Pellia fabroniana* Raddi (*Latham s.n., 7 Sep 1914*) and found that it was *P. neesiana* (Gott.) Limpr., which is now added to the hepatic flora of Southold Township. Likewise, Miller reviewed Latham's collection of *Riccardia sinuata* (Dicks.) Trev. (*Latham 2594*) and finds no evidence of this species in the packet (information furnished by L. Leonardi, in a letter, Nov. 9, 1992).

In addition to Latham's contributions, A. W. Evans did considerable collecting, during the early part of the century, on Fishers Island (Southold Town in Block Island Sound) along the Connecticut state line. Later, R. M. Schuster (1969) reported *Nardia insecta* Lindb. from Lake Montauk and *Solenostoma gracillimum* (Smith) Schust. near Montauk Point on the eastern end of Long Island's south shore. The author collected *Lunularia cruciata* (L.) Dum., *Pellia megaspora* Schust. and in 1974, the state 'rare' *Jubula pennsylvanica* (Steph.) Evans at Trout Pond, Noyac, in the town of Southampton. S. J. Smith, late Senior Scientist at the New York State Museum, added *Blepharostoma trichophyllum* (L.) Dum., *Chiloschyphus polyanthos* (L.) Corda var. *rivularis* (Schrad.) Nees, *Fossombronia cristula* Aust., and *Mylia anomala* (Hook.) S. Gray from the Riverhead area. In 1986, Miller found *Lophozia capitata* (Hook.) Macoun at the Cranberry Bog County Park, near the same locality visited earlier by Smith. The author's collections, along with the Miller and Smith specimens, are published here for the first time.

Except when otherwise noted, the specimens examined are maintained in the New York State Museum (NYS) and/or the New York Botanical Garden (NY). When a packet lacks a number, the collection is identified by the date of collection. Those species cited from literature are annotated with the reference and page number. The hepatics listed in **bold print** represent new records that were previously unpublished for eastern Long Island. An asterisk indicates that the verification of the taxon could not be substantiated, and it should be considered absent from or provisional to the hepatic flora of the region. Classification of the liverworts follows in part Stotler & Crandall-Stotler (1977).

Annotated Checklist of the Taxa from Suffolk County, New York

Division Anthocerotophyta (hornworts)
Anthoceros macounii M.A.Howe; *Latham s.n. 1950* (NYS)
Notothylas orbicularis (Schwein.) Sull.; *Latham 25* (NYS)
Phaeoceros laevis (L.) Prosk. (as *Anthoceros laevis* L.); *Latham s.n. 1914; 650; 2765; s.n. 1928* (NYS)

Division Hepatophyta (liverworts)
Aneura pinquis (L.) Dum. (as *Riccardia pinquis* (L.) S. Gray); *Latham 30; s.n. 1915* (NYS)
Asterella tenella (L.) Beauv.; *Latham s.n. 1915* (NYS)
Barbilophozia barbata (Schmid. ex Schreb.) Loeske (as *Lophozia barbata* (Schreb.) Dum.)"on rock in swamp," Gardiner's Island, East Hampton Town; *Latham s.n. 1922* (NYS)
Bazzania trilobata (L.) S. Gray; *Latham 1953; s.n. 1928; s.n. 1936; 36773; 33034; 33035* (NYS)
Blasia pusilla L.; *Latham s.n. 1927* (NYS)

Blepharostoma trichophyllum (L.) Dum. - sandy soil, Wildwood State Park; *Smith 17768* (NYS)

Calypogeia fissa (L.) Raddi subsp. ***neogaea*** Schust. (as *C. fissa* (L.) Raddi) "on wet clay in rich woods," Greenport, N.Y. determined by Fulford; *Latham 8249* (ABSH)

**C. sphagnicola* (Arn. et Perss.) Warnst. et Loeske (published in error; Burnham & Latham, 1923)

C. sullivantii Aust.; *Latham 66; 705* (NYS)

C. muelleriana (Schiffn.) K.Müll. subsp. *muelleriana* (as *C. trichomanis* (L.) Corda); *Latham 61; s.n. 1924; 33089* (NYS)

Cephalozia biscuspidata (L.) Dum.; *Latham 1957; 3958; s.n. 1930; 8266; s.n. 1943; 25829; 27090* (NYS)

C. catenulata (Hub.) Lindb.; *Latham s.n. 1924; s.n. 1926; 3998; 5129; 22214* (NYS)

C. connivens (Dicks.) Lindb.; *Latham 8377; 8381* (NYS)

****C. loitlesbergeri*** Schiffn. - doubtful, the following collections consist of mostly sterile plants; *Latham 33849; 33939; 33029; 33040; s.n. 1960* (NYS)

C. lunulifolia (Dum.) Dum. (as *C. media* Lindb.); *Latham 26; 40; s.n. 1924; 36792; 8943; 22225; 27092; 33937; 34188; 34397; 34398; 34403; 34405; 35084; 36898* (NYS)

C. macrostachya Kaal.; *Latham 24012; s.n. 1915; 2601; 2776; 2839; 28333* (NYS)

Cephaloziella divaricata (Sm.) Schiffn. (as C. byssacea (Roth.) Warnst.); *Latham 927; s.n. 1926* (NYS)

C. hampeana (Nees) Schiffn. Sag Harbor; *Latham 25918* (NYS)

Chiloscyphus minor (Nees) Eng. & Schust. (as *Lophocolea minor* Nees); *Latham 762; s.n. 1933* (NYS)

C. pallescens (Ehrh. ex Hoffm.) Dum. var. ***pallescens*** (as *C. pallescens* (Ehrh.) Dum.); *Latham 27088; 34302* (NYS)

C. polyanthos (L.) Corda var. ***rivularis*** (Schrad.) Nees (as *C. rivularis* (Schrad.) Loeske); *Smith 933* (NYS)

C. profundus (Nees) Eng. & Schust. (as *Lophocolea heterophylla* (Schrad.) Dum.); *Latham 64; 653; 28; s.n. 1915; s.n. 1920; 597; s.n. 1924 s.n. 1927; s.n. 1929; 24017; 34112* (NYS)

Cladopodiella fluitans (Nees) Joerg. (as *Cephalozia fluitans* (Nees) Spruce); *Latham s.n. 1915* (NYS)

C. francisci (Hook.) Joerg. (as *C. francisci* (Hook.) Dum.); *Latham 56; s.n. 15 Sep 1915; s.n. 25 Sep 1915; 2348; 2367;* (NYS)

Conocephalum conicum (L.) Lindb.; *Latham 2772; 3902; s.n. 1923; s.n. 1925; s.n. 1927* (NYS)

Diplophyllum apiculatum (Evans) Steph.; *Latham s.n. 1915; s.n. 1957* (NYS) (Schuster, 1974, p. 209)

Fossombronia cristula Aust. - "portion with mature fruit grown indoors to 8 Nov 75."; *Smith 12* (NYS)

F. foveolata Lindb.; *Latham 24; s.n. 1927* (NYS)

Frullania asagrayana Mont.; *Latham 763; 5121; s.n. 1929; 7668; 7736; 7738; 7751; 24651; 27091; 33970; 36848; 36851; 36900* (NYS)

F. eboracensis Gott.; *Latham 31; 60; s.n. 1919; 745; 919; 2421; s.n. 9 Mar 1924; s.n. 30 Aug 1924; s.n. 1926; 4027; s.n. 1933; 7750; 27093; 34627* (NYS)

Geocalyx graveolens (Schrad.) Nees (the packet is lacking substrate information) Gardiner's Island, East Hampton Town; *Latham s.n. 1926* (NYS)

Gymnocolea inflata (Huds.) Dum.; *Latham 27089* (NYS)

Harpanthus drummondii (Tayl.) Grolle (as *H. scutatus* (Web. et Mohr) Spruce) *Latham s.n. 1928; s.n. 1930* (NYS)

Jamesoniella autumnalis (DC.) Steph.; *Latham 3165; 33107; 33026; 33032; s.n. 1920; s.n. 20 Oct 1920; s.n. 1928; s.n. 1934; s.n. 1943; s.n. 1949; 33956; 34397; 36149; 36764* (NYS)

Jubula pennsylvanica (Steph.) Evans - on inundated tree roots in a stream, recollected December 1990 the latter collection annotated by Stotler; *Biechele 43/1, LI5-90* (NY)

Jungermannia leiantha Grolle (as *J. lanceolata* L.) Montauk; *Latham s.n. 1929*

J. pumila With. (as *J. lanceolata* L.) determined by J. Vàva; *Latham s.n. 1924* (NYS)

Kurzia setacea (G.Web.) Grolle (as *Lepidozia setacea* (G. Web) Mitt.); *Latham s.n. 1919; 34401* (NYS)

K. sylvatica (Evans) Grolle (as *L. sylvatica* Evans); *Latham 34409; s.n. 1920; 2336; s.n. 1924; 2774; 8245; 22214; 24765; 26014; 36149; 36774; 36775* (NYS)

Lepidozia reptans (L.) Dum.; *Latham s.n. 1926; s.n. 1944* (NYS)

Lejeunea cavifolia (Ehrh.) Lindb. emend. Buch; *Latham s.n. 1919* (NYS)

Lophozia bicrenata (Huds.) Dum.; *Latham 7739; 32728* (NYS)

L. capitata (Hook.) Macoun - "edge of fen with open standing water,"; *Miller 9458* (NYS); (Fishers I., Evans *fide* Schuster, 1969, p. 473)

L. incisa (Schrad.) Dum. var. ***inermis*** K.Müll. (As *L. incisa* (Schrad.) Dum.); *Latham s.n. 1927; s.n. 1928; s.n. 1937; s.n. 1945* (NYS)

Lunularia cruciata (L.) Dum. - introduced; *Biechele 16/1* (NY)

Marchantia polymorpha L.; *Latham 67; 649; s.n. 1925; s.n. 1926; s.n. 1927; 24836; 33025; 32727; 28380* (NYS)

Marsupella sphacelata (Gieseke) Dum. (as *M. sullivantii* [DeNot.] Evans) Sag Harbor; *Latham s.n. 1946* (NYS)

Mylia anomala (Hook.) S. Gray - "sparce in hummocks of *Sphagnum*, etc, boggy thickets along Peconic River"; *Smith 51555* (NYS)

Nardia insecta Lindb. (Schuster, 1969, p. 874)

Nowella curvifolia (Dicks.) Mitt. (as *Cephalozia curvifolia* (Dicks.) Dum.); *Latham 21; 4002; s.n. 1939; 8261* (NYS)

Odontoschisma denudatum (Nees ex Mart.) Dum.; *Latham 32976; 34519; 36765* (NYS)

O. prostratum (Sw.) Trev.; *Latham 63; 126; s.n. 1915; 3559; s.n. 1 Feb 1924; s.n. 9 Mar 1924; 2598; 2840; 3907; 8245; 27383; 28175; 28340; 28331; s.n. 1949; s.n. 1950; 30540; 30541; 32687* (NYS)

O. sphagni (Dicks.) Dum. Montauk; *Latham 28175; 28185* (ABSH)

Pallavicinia lyellii (Hook.) Carruth.; *Latham 285; s.n. 1914; s.n. 1922; s.n. 1923; s.n. 1 Feb 1924; s.n. 10 Mar 1924; 3899; s.n. 1928; 22853; 24016; 28161; 28176; 28181; 33107; 35085* (NYS)

P. epiphylla (L.) Corda; *Latham s.n. 1925; 2784; s.n. 1927; 5115; 34299; 34542* (NYS)

Pellia megaspora Schust. (formerly *P. endiviifolia* (Dicks.) Dum.) *Biechele 11/3, 11/4* (NY)

P. neesiana (Gott.) Limpr. (as *P. fabroniana* Raddi) determined by Miller (published in error; Burnham & Latham, 1917); *Latham s.n. 1924; s.n. 1929* (NYS)

Plagiochila porelloides (Torry ex Nees) Lindb. (as *P. asplenioides* (L.) Dum.) "wet bank in woods," Gardiner's Island, East Hampton Town; *Latham s.n. 1927* (NYS)

Porella pinnata L.; *Latham s.n. 1914; 68; s.n. 1 May 1919; s.n. 2 May 1919; s.n. 1924* (NYS)

P. platyphylloidea (Schwein.) Lindb. (as *P. platyphylla* (L) Lindb.); *Latham s.n. 1917; 39* (NYS)

Preissa quadrata (Scop.) Nees - packet with no other data except, "wet shore of pool, in woods."; *Latham s.n. 1927* (NYS)

Ptilidium pulcherrimum (G. Web.) Hampe; *Latham 596; s.n. 1934; 36607; 7736; 8380; 22324; 27392; 28334; 32690; 34440* (NYS)

Radula complanata (L.) Dum.; *Latham s.n. 1919; s.n. 1926* (NYS)

Riccardia latifrons Lindb.; *Latham 1531; s.n. 1927* (NYS)

R. multifida (L.) S. Gray; *Latham 1532; 2597; 27096* (NYS)

****R. sinuata*** (Dicks.) Trev. - the packet does not contain any material of this specimen; *Latham 2594* (NYS)

Riccia fluitans L.; *Latham 35; s.n. 1920; s.n. 1921; s.n. 1923; s.n. 1926; 4409; 7855* (NYS)

R. sullivantii Aust.; *Latham s.n. 1915* (NYS)

Ricciocarpos natans (L.) Corda; *Latham s.n. 1915; s.n. 1922; s.n. 1927* (NYS)

Scapania nemorea (L.) Grolle (as *S. nemorosa* (L.) Dum.); *Latham s.n. 1924; 2044; 2334; 2600; s.n. 1929* (NYS)

Solenostoma gracillimum (Sm.) Schust. (Schuster, 1969, p. 976)

Telaranea nematodes (Gott. ex Aust.) M.A.Howe (as *Lepidozia setacea* (G.Web.) Mitt.) annotated by Miller; *Latham 34181* (NYS)

Trichocolea tomentella (Ehrh.) Dum. - in swampy areas at Montauk and Sag Harbor; *Latham 35940; s.n. 1924* (NYS)

The purpose of this checklist is to recognize the sixty-three hepatic contributions of Roy Latham and provide a current catalog of species known from eastern Long Island. Unfortunately, there were two enigmas with the preparation of this paper. First, Latham's collections represent duplicate specimens that may not necessarily contain the same material he sent for determination. Secondly, the identification of sterile collections was based upon the expertise of other specialists who had verified Latham's material in the past. Their annotations do not necessarily represent current taxonomic changes.

The contrasting ecological diversity of the region supports a rich liverwort and hornwort flora of seventy-three taxa. Three interesting species, rarely occurring on the Coastal Plain, were found by Latham. They are: *Barbilophozia barbata* (Schmid. ex Schreb.) Loeske; *Geocalyx graveolens* (Schrad.) Nees; and *Marsupella sphacelata* (Gieseke) Dum. These possible relics from the last glacial epoch found refuge in the hepatic communities of eastern Suffolk County.

Acknowledgments. Mulford Martin, formerly the Honorary Curator of Bryophytes, at the New York Botanical Garden determined my Long Island collections. Special gratitude is extended to Norton G. Miller and Lorinda Leonardi of the New York State Museum for permitting access to Roy Latham's hepatic collections. Dr. Miller graciously reviewed several questionable identifications of the Latham material and made suggestions for the final draft of this paper. Thanks is also extended to Raymond E. Stotler for his encouragement and support with reviewing the manuscript.

Literature Cited

Brodo, I. M. 1968. *The Lichens of Long Island, New York: A Vegetational and Floristic Analysis.* pp. 1-330. New York State Museum, Albany.

Burnham, S. H. & R. A. Latham. 1914. The flora of the town of Southold, Long Island, and Gardiner's Island. *Torreya* 14:201-25.

______. 1917. The flora of the town of Southold, Long Island, and Gardiner's Island. First Supplementary List. *Torreya* 17:111-22.

______. 1921. The flora of the town of Southold, Long Island, and Gardiner's Island. Second Supplementary List. *Torreya* 21:1-34.

______. 1923. The flora of the town of Southold, Long Island, and Gardiner's Island. Third Supplementary List. *Torreya* 23:25-31.

______. 1924. The flora of the town of Southold, Long Island, and Gardiner's Island. Fourth Supplementary List. *Torreya* 24:22-32.

______. 1925. The flora of the town of Southold, Long Island, and Gardiner's Island. Fifth Supplementary List. *Torreya* 25:71-83.

Latham, R. A. 1917. Habitat of *Cephalozia francisci* on Long Island, N.Y. *The Bryologist* 20:64.

Schuster, R. M. 1969, 1974. *The Hepaticae and Anthocerotea of North America, East of the Hundredth Meridian*. Vol. II: pp. 1-1062, Vol. III: pp. 1-880. Columbia University Press, New York.

Stotler, R. & B. Crandall-Stotler. 1977. A Checklist of the liverworts and hornworts of North America. Bryologist 80: 405-428.

Vernacular lichen names:

Swedish names translated to English

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Abstract. *Vernacular names are presented in a comparative table with the Swedish and the translated English name for the genera of lichens that occur both in Sweden and North America. An annotation of the vernacular name is presented for each genus treated. Examples of cultural differences and the suitability of corresponding English names are given for a few selective genera. This list of names may serve as a foundation for English vernacular names of lichens in North America.*

Recent interest in lichens as monitors of air pollution has provided at least some impetus to recognize that they are an important part of the ecosystem. There are many species with different properties that cannot simply be lumped into the category of moss or lichen when assessing environmental impact (Glime 1989). Colorful lichens attract attention, yet rarely are they even treated at the generic level in the general ecological literature. In order to develop wider interest in lichens, it is of fundamental importance to have common names for them in various languages. Interest in plants develops as one grows up, in a society which does not know or use scientific names to any great extent. As a child, student, or adult one needs to become aware of lichens before more detailed scientific interest can develop. Therefore, lichens and names for lichens need to become a part of society before a greater interest and appreciation will develop for them.

At present only superficial coverage of lichens is present in most ecological and academic studies. Both the ecologist and the plant taxonomist are becoming more narrow in their studies and are less field oriented every year. This trend appears to neglect lichens and other lesser known plant groups. In contrast, the ornithologists have accepted common names for birds, which are well known among laypersons. A similar system for lichens would most certainly increase public awareness of this large plant group.

There are common names for lichens in some of the historic literature. We have found many of the historic American names used in the literature to be inadequate, as they often lack organizational continuity or simplicity. In other parts of the world, such as northern Europe, China, and Japan, lichens have traditionally been a part of

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the culture and many of them have common names. These names have been ignored by the Americans because of the language barrier, but they can in many cases provide us with more interesting and easily remembered names than our contrived translations of the Latin names (Glime 1989). Therefore, where these names exist for american genera or species we suggest reviewing them for usage.

In reviewing common names used in other cultures we were impressed with the Swedish model of common names for lichens (Moberg 1985). Moberg uses straightforward utilitarian names that often refer to morphology or preferred habitat. In this article, we are presenting a basis for a generally yet flexible, binomial system of common names which reflects natural and generic relationships comparable to the Latin name system of Linnaeus, and to the Danish common names published by Christiansen (1978). We do not plan to assign a common specific epithet for each individual lichen in North America. We hope only to name lichens which are important to the general public or for plant protection. However, each species of lichen could be referenced in the general treatment by the generic common name, and could be communicated about at some taxonomic level. Common names should be consistent in general meaning between languages when relevant and should aid in the identification and natural organization of the taxa. We feel that morphology should be a priority over habitat since habitat and substrate preference is not always consistent across or within continents.

This annotated list was worked out in collaboration with several North American lichenologists. Many books were consulted regarding existing common names for lichens, of which the following authors and publications were most useful: Christiansen 1978, Marshall 1920, Moberg 1985, Nearing 1947, and Phillips 1980. For Synonyms see Moberg (1985). Both positive and negative encouragement and comments were incorporated as much as possible. There is reluctance by some professionals to lend any encouragement to the use of common names. The most frequent rationale is that some of the common names make little sense and are even harder to remember and pronounce than the Latin names themselves. This point is well taken. If a common name for a genus is not found useful, then we support the use of the scientific name of the genus as the common name, as long as the generic name is relatively short and simple. The generic name is often used informally by lichenologists in the field or around the meeting hall in reference to complexes of species or related genera.

For example, the term *Lecanora*-like is used when casually speaking about a lichen crust in the field that may in fact belong to a different genus and when it would be difficult to make an accurate determination without the aid of in-depth microscopic or chemical observation. The technical difficulties of recognizing some species are so great that only a few professional botanists may hope to determine their identity in the field. We envision that common names can also be employed in a hierarchical manner as in the above example. Laypersons can refer to the common lichens the same as lichenologists do in the field.

This published list includes only genera which were treated by Moberg (1985) and are present in North America. We chose to limit the list to these genera for consistency and for direct comparison between languages. This publication has a table of the various names and translations for comparing the Swedish and English. Consistency among languages is sought when appropriate, though some Swedish names are not appropriate due to cultural differences. For example, the translation of *Stereocaulon* (*paschale*) means Easter lichen. The significance of this name was cryptic to us at first as it was to another American, Marshall (1920), who noted "its significance is not evident". Cultural investigation showed that the Swedish word påskris could be translated as referring to the Easter birch twig. In Sweden, the Christian celebration of the resurrection begins in the early spring with the forced budding of (*Betula*) birch twigs for use as Easter decorations. The genus *Stereocaulon* resembles in habit these budding birch twigs. The cephalodium portion of *Stereocaulon* resembles the buds of the birch twigs. Therefore, the common Swedish name is very appropriate in Sweden but not in North America, where this practice is not a part of our culture. We would suggest the name "snow lichen" instead, which refers to the white-colored, mat-like growth habit and its northern distribution in North America, where snow is common.

Similarly, the Swedish common name for the genus *Xanthoria*, vägglavar, is translated as wall lichen. In the maritime climate of Scandinavia it frequently grows on rock walls. We prefer, however, the name Orange lichen, because in our more continental climate *Xanthoria* species occur commonly on wood and bark rather than on rock walls. This example illustrates that common names based on morphology may appeal to a wider audience than names based on habitat preferences.

A list of this type is naturally subject to revision and our hope is that all who have thought through proposals for changes and additions will convey them to us. By publishing a list of genera in this journal, it is hoped that readers who are familiar with common names will provide constructive criticism prior to the publication of a more comprehensive list of North American lichens with vernacular names.

This list of genera may build a binomial common name system for the common North American lichen species. Adjectives in front of generic names will identify species. Long strings of adjectives will be avoided. By developing lichen names for the layperson, we hope to increase the level of interest which would lead to the advancement of lichen studies.

An annotated list of Swedish and translated English vernacular names for lichen genera.

Information is listed:
Scientific name Swedish name - English translation: annotation. An * denotes interpreted from the species level names of Moberg (1985).

Acarospora spricklavar - Cracked lichens: refers to the cracked appearance of the surface.

Alectoria tagellavar - Horsehair lichens: thallus is hair-like. *Alectoria*, *Bryoria* and *Usnea* have been called "witch's hair" or some other folk name in the past. We suggest "witch's hair" is the most suitable name for the genus *Alectoria*.

Anaptychia franslavar* - Fringed lichens: refers to the marginal hair-like structures.

Arthonia pricklavar* - Dot lichens: refers to general appearance of the apothecia.

Arthopyrenia snäckskalslavar* - Snailshell lichens: frequently occurs on sea shells or barnacles.

Aspicilia kantlavar - Rim lichens: refers to distinct coloration and textures on the rim of the sunken apothecia.

Baeomyces hattlavar - Cap lichens: refers to the overall shape and distinctive coloring on the upper portions of the apothecia.

Bryoria tagellavar - Horsehair lichens: refers to the dark color, thick coarse texture, and hair-like growth form.

Buellia skivlavar - Disc lichens: refers to the shape of the apothecia and its unattached margins.

Calicium spiklavar - Nail lichens: refers to the overall shape of the fruiting body. "Nail lichen" may also be used for the genus *Pilophorus*. "Stubble" may better describe North American *Calicium*.

Caloplaca orangelavar - Orange lichens: refers to thallus color.

Candelaria citronlavar* - Lemon lichens: refers to thallus color.

Candelariella ägglavar - Egg lichens: refers to thallus color (egg yolk).

Catapyrenium jordlavar - Earth lichens: refers to the general appearance and habitat.

Catillaria skivlavar* - Disc lichens: refers to the shape of the apothecia and its unattached margins.

Cavernularia kavernularia* - Cavernularia: Small pits or "caverns" occur on the underside of the thallus. "Pitted lichens" may well describe this genus for North America.

Cetrelia jättesköldlavar* - Giant shield lichens: refers to the relative size and shield-like shape of the thallus.

Chaenotheca nållavar - Needle lichens: refers to the overall shape and diminutive stature.

Chrysothrix mjöllavar - Meal lichens: refers to the surface texture and general appearance.

Cladina renlavar - Reindeer lichens: refers to the importance of this genus in the diet of the reindeer; a traditional name.

Cladonia bägarlavar - Cup lichens: refers to overall shape of many of the thalli.

Coelocaulon hedlavar - Heath lichens: refers to the preferred habitat.

Collema gelélavar - Jelly lichens: refers to the texture and appearance when moist.

Coniocybe knappnålslavar - Pin lichens: refers to the overall shape.

Cyphelium sotlavar - Soot lichens: refers to the sooty texture of the reproductive structures.

Cystocoleus sammetslavar* - Velvet lichens: refers to the overall thallus texture and appearance.

Dermatocarpon sipperlavar - Ooze lichens: refers to the moist habitat where it frequently occurs.

Dimelaena berglavar* - Mountain lichens: refers to the preferred habitat. The generic name, which is simple and easy to use, may be a better vernacular name.

Diploschistes groplavar - Dimple lichens: refers to the general sunken appearance of the apothecia.

Endocarpon kalklavar - Limestone lichens: refers to the preferred habitat. The generic name, which is simple and easy to use and refers to the enclosed asci (carpon), may be a better name for this genus.

Ephebe trådlavar - Thread lichens: refers to its overall appearance.

Evernia ringlavar - Ring lichens: The translation is unclear to us. The generic name is simple and may be a good English name as well.

Fulgensia svavellavar - Sulphur lichens: refers to the yellow-green color of the thallus.

Graphis skriftlavar - Script lichens: refers to the general appearance of the apothecia which suggests a written or typed script.

Gyalecta groplavar - Dimple lichens: refers to the dimple-like appearance of the apothecia.

Haematomma blodplättlavar* - Bloodstain: refers to the apothecia which are the color of bloodstains. The Latin means "red eye".

Huilia blocklavar - Boulder lichens: refers to their habit of occurring on exposed boulders.

Hypocenomyce flarnlavar - Cockleshell lichens: refers to the overall appearance.

Hypogymnia blåslavar - Bladder lichens refers to the hollow tubular shape of the lobes. "Tube" may be a more cosmopolitan term for the lichen shape.

Icmadophila vitmosslavar* - White-moss lichen: refers to the color of the thallus and coarse texture resembling moss, over which it often grows.

Lasallia tuschlavar* - India ink lichens: refers to the black, irregular soralia that look like ink drops along the thallus margins.

Lecanactis gammelgranslavar* - Old spruce lichens: refers to the preferred habitat of the genus in Sweden. In North America, it is more common on old wood which may be a better vernacular name for this genus.

Lecanora kantlavar - Rim lichens: refers to the thallus rim surrounding the apothecia.

Lecidea skivlavar - Disc lichens: refers to the shape of the apothecia and its unattached margins.

Lecidella skivlavar - Disc lichens: refers to the shape of the apothecia and its unattached margins.

Lepraria mjöllavar - Mealy lichens: refers to the thallus structure and texture.

Leprocaulon mjöllavar* - Mealy lichens: refers to the thallus structure and texture.

Leptogium skinnlavar - Skin lichens: refers to the overall appearance and texture of the thallus.

Leptorhaphis näverpricklavar* - Birchbark dot lichens: refers to the small apothecia which appear as dots on birchbark.

Letharia varglavar* - Wolf lichens: represents the traditional name and historic use. In Scandinavia, this genus was boiled with lard to extract a fat-soluble poison which was used to kill wolves.

Lichina tånglavar - Seaweed lichens: refers to the brown seaweed color of this crustose lichen which grows along the coast.

Lobaria lunglavar - Lung lichens: refers to the traditional name which is derived from the thallus appearance and its historic use as a cure for lung diseases under the "Doctrine of Signatures" practices.

Lopadium kornlavar - Granular lichens: refers to the thallus structure and texture.

Massalongia fliklavar - Lobate lichens: refers to the abundant lobes of the thallus.

Menagazzia hål-lavar* - Hole lichens: refers to the perforated thallus.

Micarea dynlavar - Cushion lichens: refers to the general adnate appearance of the thallus.

Multiclavula lavklubbor - Lichen clubs: refers to the shape of the reproductive structures.

Mycoblastus blodlavar - Blood lichens: refers to the blood-red color inside the apothecia.

Nephroma njurlavar - Kidney lichens: refers to the kidney-brown color (dry) of many of the species in the genus.

Normandina mussellavar* - Clam lichens: refers to the thallus shape which is like an opened clam shell.

Ochrolechia örnlavar - Eagle lichens: The origin of this name is lost in antiquity. "Cudbear" is the name often used for this lichen by those who dye wool.

Omphalina navlingar - Navel lichens: refers to the depressed cap of this lichenized mushroom.

Opegrapha klotterlavar - Scribble lichens: refers to the pattern the apothecia produce.

Pannaria gytterlavar - Matted lichens: refers to the general appearance of the thick thallus.

Parmelia sköldlavar - Shield lichens: refers to the shield-like shape of the thallus.

Parmeliella blylavar - Lead lichens: refers to the color of the thallus.

Parmeliopsis klilavar* - Bran lichens: refers to the structure and texture of the thallus surface.

Peltigera filtlavar - Felt lichens: the thick upper surface and rhizines below resemble felt (a type of cloth).

Pertusaria porlavar - Pore lichens: refers to the general appearance of the apothecia.

Phaeophyscia kranslavar - Wreath lichens: refers to the overall circular shape of the thallus which is often slightly raised above the substrate by the wreath of rhizines.

Phlyctis blemlavar - Blemished lichens: refers to the skin-like thallus which is often blemished with cracks or wrinkles, and sometimes small warts.

Physcia rosettlavar - Rosette lichens: refers to the overall thallus shape and its closely adnate growth habit in contrast to wreath lichen (*Phaeophyscia*), which is often slightly inflated and less adnate in its growth form.

Physconia dagglavar - Dew lichens: refers to the crystals that form on the surface of these rosette-forming lichens. The white pruina of many species may better be referred to as "frost" than "dew".

Pilophorus kolvlavar - Spike lichens: refers to the overall appearance of the thallus, which stands upright. It has a small head on top similar to a large spike or nail.

Placopsis knöllavar - Nodular lichens: refers to the darker colored nodules near the center of the thallus. The only species common in North America resembles a target with nodules in the bull's eye. "Bull's eye" may be a better name for this genus.

Placynthium bläcklavar - Ink lichens: refers to the dark black color of the thallus.

Platismatia näverlavar - Birch-bark: refers to the generally ragged thallus, similar to birch (*Betula*) bark.

Porina vårtlavar - Wart lichens: refers to the apothecia which are protruding warts on a smooth background.

Protoblastenia skivlavar* - Disc lichens: refers to the shape of the apothecia and its unattached margin.

Pseudephebe stentagel - Rock horsehair: refers to the occurrence on rock of this black, hair-like lichen.

Psora skivlavar - Disc lichens: refers to the shape of the thallus.

Psoroma skållavar - Bowl lichens: refers to the bowl-shaped depression of the apothecia.

Pycnothelia papillavar* - Papillae lichens: refers to the dark-tipped bumps or papillae characteristic of the thallus.

Pyrenula vårtlavar - Wart lichens: refers to the reproductive structures which appear as protruding warts on a smooth background.

Ramalina brosklavar - Cartilage lichens: refers to the stringy overall shape and cartilaginous or rubbery texture.

Rhizocarpon kartlavar - Map lichens: refers to the irregular pattern the apothecia which resembles a route drawn on a map.

Rhizoplaca navelkantlavar - Rimmed navel: refers to the rimmed apothecia and the single or navel-like attachment of the thallus to the substrate.

Rinodina krimmerlavar - Persian lambskin lichens: the surface of many species is like "krimmer", Persian lambskin. The generic name is simple and may be more useful as a vernacular name.

Siphula vitfingerlavar* - White finger lichens: refers to the overall appearance of the thallus. Technical name derived from "sipho" which means elongated tube.

Solorina säcklavar - Sack lichen: refers to the sunken, sack-like apothecia. We prefer "chocolate chip lichen", referring to the large, dark apothecia.

Sphaerophorus sprödlav - Fragile lichens: refers to the brittle nature of the thallus lobes.

Squamarina kantlavar - Rim lichens: refers to the thallus rim surrounding the apothecia.

Staurothele vårtlavar - Wart lichens: refers to the bumpy surface appearance.

Stereocaulon påskrislavar - Easter lichen: refers to the resemblance of the cephalodium on the lichen to the budding birch twigs used to celebrate Easter in Sweden (see Introduction).

Sticta ärrlavar - Pock-marked lichens: refers to the holes in the lower cortex.

Thamnolia masklavar* - Worm lichens: refers to the general appearance of the thallus.

Thelotrema havstulpanlavar - Barnacle lichens: refers to the overall appearance of the thallus and the sunken apothecia.

Tholurna urnlavar* - Urn lichens: refers to the general shape of the apothecia.

Toninia knagglavar - Bruised lichens: refers to the black and blue, bruised appearance of the thallus.

Trapelia vägkantlavar* - Road shoulder lichens: refers to the pseudothalline margin of the apothecia which is formed by its eruption through the thallus, breaking apart like asphalt on a road's shoulder. "Disc lichen" may be a better name for this genus.

Tremolecia skivlavar - Disc lichens: refers to the shape of the apothecia and its unattached margins.

Umbilicaria navellavar - Navel lichens: refers to the single point or navel-like attachment of the thallus to the substrate. In North America, this genus has often been referred to as "rock tripe".

Usnea skägglavar - Beard lichens: refers to the coarse-textured hair-like appearance of the thallus.

Verrucaria vårtlavar - Wart lichens: refers to the bumpy surface appearance.

Xanthoria vägglavar - Wall lichens: refers to the preferred substrate in Scandinavia. We prefer the more descriptive "orange lichen" for this genus, which grows on many different substrates in North America.

Literature Cited

Christiansen, M. S. 1978. *Flora I Farg. 2. Sporeplanter*, Politikens Forlag, Kobenhavn.

Coombes, A. J. 1987. *Dictionary of Plant Names*. Timber Press, Beaverton, Oregon.

Egan, R. S. 1987. A fifth checklist of the lichen-forming lichenicolous and allied fungi of the continental United States and Canada. *The Bryologist* 90(2): 76-173.

Glime, J. M. 1989. Should mosses have common names? *Evansia* 6(1): 1-6.

Malmström, S., Györki, I. & Sjögren, P. A. 1986. *Bonniers svenska ordbok*. Printed in Finland.

Marshall, N. L. 1920. *Mosses and lichens. A popular guide to the identification and study of our commoner mosses and lichens, their uses, and methods of preserving*. Doubleday, Page, and Co., Garden City, NY.

Moberg, R. 1985. Lavar med svenska namn. *Svensk. Bot. Tidskr.* 79: 221-236, Stockholm, Sweden.

Nearing, G. G. 1947. *The Lichen Book*. Ridgewood, New Jersey.

Nöjd, R., Tornberg, A., and Angström, M. 1959. *Mckay's Modern English-Swedish and Swedish-English Dictionary*. David McKay Co., Inc., New York, NY.

Phillips, R. 1980. *Grasses, ferns, mosses and lichens of Great Britain and Ireland*. Pan Books, Cavaye Place, London.

Santesson, R. 1981. *Lexironredaktion chef. Svensk-engelsk ordbok. Esselte Studium*. Richard Clay (The Chaucer Press) Ltd, Suffolk, England.

Stearn, W. T. 1986. *Botanical Latin*. David and Charles, Inc., North Pomfret, Vermont.

The Distribution of North American Bryophytes
Roellia roellii

Dale H. Vitt[1]

About the turn of the century, Holzinger, Britton, Roell, and Macoun & Kindberg all described this moss under different names, and in two different genera, *Mnium* and *Bryum*. Brotherus and Kindberg then transferred names described (his own in the case of Kindberg) in *Bryum* to *Mnium*. In 1897, Kindberg then described a new genus, *Roellia*, placing two names in it - *R. lucida* and *R. simplex*. Howard Crum (1967) in a short review of the genus makes the interesting observation that "it is remarkable that such a common, widely distributed, and distinctive moss should not have been described until 1890 and that four different names were provided for it between 1890 and 1895". As it turns out, the oldest name available in *Roellia* is neither of those used by Kindberg, but *Roellia roellii*, described by Roell in 1890 in the genus *Mnium*, one year before Britton described *Bryum lucidum*.

Roellia is monotypic and endemic to western North America. The genus is distinguished by a combination of characters that readily separate it from all genera in both the Bryaceae and Mniaceae. The stems form rosettes that do not originate from underground stems, the leaves are broad, delicate and have a very distinctive, wrinkled appearance; the leaves are also bordered, but not as strongly as in most other members of the Bryaceae, and the leaf cells are much longer than wide. These features in general, as well as others, relate the genus to the Bryaceae rather than the Mniaceae, and to some members of the genus *Bryum*.

Roellia roellii is endemic to western North America, known from central British Columbia and southwestern Alberta southward through western Washington, central and eastern Oregon to northern California and southern Idaho, western and central Montana to northwestern Wyoming, northern Utah, and northern Colorado. This range, however, is in reality much more dissected than indicated by this regional description. The species is most common in subalpine spruce-fir forests, especially in the interior of British Columbia, northern Idaho, southwestern Alberta, and northwestern Montana; as well it occurs less abundantly in western British Columbia and Washington. Northward it continues sporadically along the interior cedar forests of the western slopes of the Rockies with one seemingly disjunct occurrence in central British Columbia. Southward, it extends along the interior valleys of Oregon. It is apparently disjunct in the Snowy Mountains of Montana, the Yellowstone-Teton area of Wyoming, the Rockies of Colorado, and the Unitas in Utah. In California, Dan Norris (in lit.) reports its occurrence on litter, soil of creek banks, and thin soil over boulders, mostly in the Siskiyou Mountains near timberline; but also occasional in the northern Sierra's and Cascades. The superficial continuous distribution is in fact a series of discontinuous high elevation stations, both to the north and south of the main range of the species. Farther north,

Roellia roellii occurs on humus in shaded mid and higher elevation spruce-fir and cedar-hemlock forests. It is found with other western North American endemics as *Brachythecium hylotapetum* and *Rhytidiopsis robusta*.

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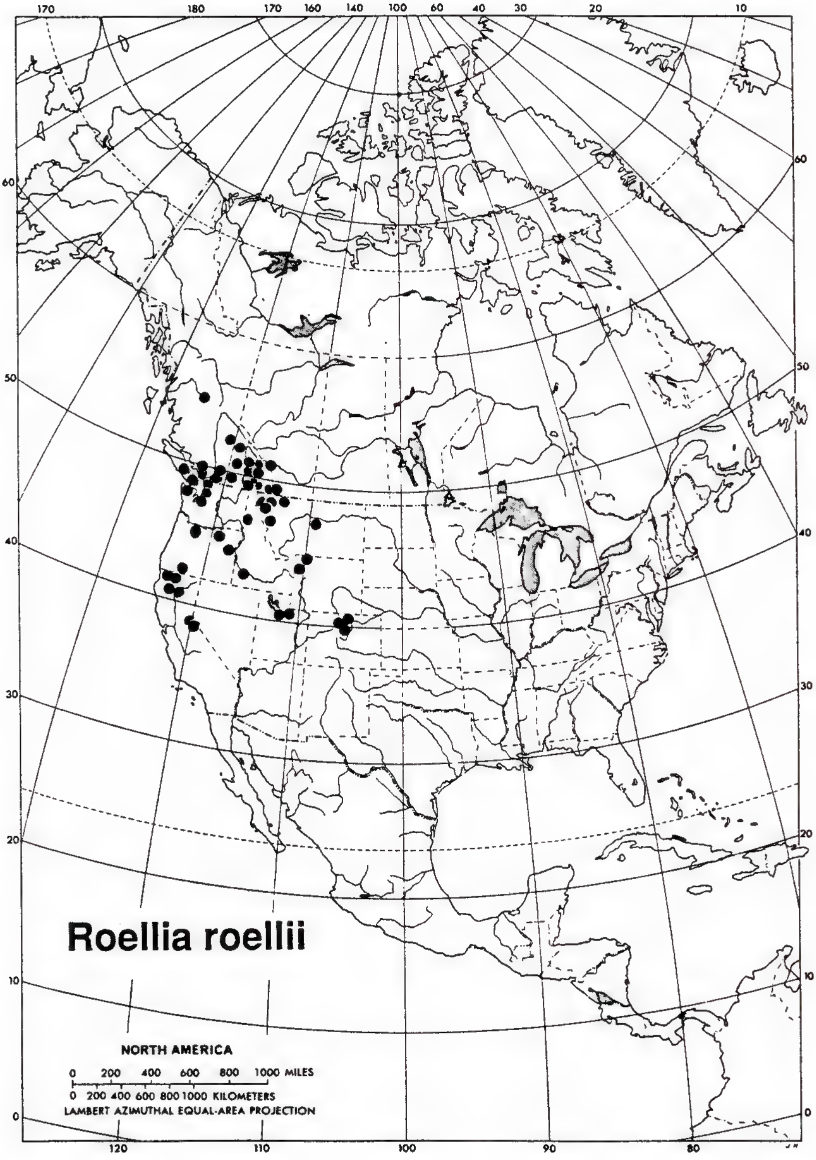
William Weber and Dan Norris furnished distribution records for some localities from the western United States, for which I am grateful.

Literature Cited

Crum, H. 1967. Studies in North American Bryaceae I-II. *The Bryologist* 70: 106-110.


170
180
170
160
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100
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20
10
0
Roellia roellii
NORTH AMERICA
0 200 400 600 800 1000 MILES
0 200 400 600 800 1000 KILOMETERS
LAMBERT AZIMUTHAL EQUAL-AREA PROJECTION
120
110
100
90
80

Contribution to the Bryophyte Flora of the Lake Erie Islands

G. L. Smith Merrill[1]

Abstract. *This paper lists new distributional records for mosses from the U.S. Lake Erie Islands, Erie and Ottawa Counties, Ohio. Sixteen taxa of mosses are reported as new to the Lake Erie Islands, and a list of bryophyte taxa (119 mosses, 12 hepatics) reported from these islands is given as a basis for further studies.*

The western end of Lake Erie is shallow, averaging 32 feet in depth as compared with more than 200 feet at the eastern end. Gently sloping layers of limestone bedrock form two prominent north-south cuestas, parts of which rise above the level of the lake and form the Lake Erie Islands. These islands extend as 'stepping-stones' from Point Pelee, Ontario, Canada, to Marblehead, NW of Sandusky, Ohio. The islands lie on either side of the international boundary between the U.S. and Canada, and the waters near Put-in-Bay on South Bass Island are famous as the site of Commodore Perry's victory over the British at the Battle of Lake Erie, during the War of 1812. Wave-cut rocky shorelines are typical of most of the islands, particularly on the north and west sides. The islands and adjacent mainland represent a distinct physiographic unit. To the west, the shoreline of Lake Erie is characterized by marshy areas with low barrier beaches; to the east the shoreline consists of low bluffs of glacial till and underlying shale (Herdendorf, 1987).

The largest of the islands are Pelee Island, Ontario, Canada (11,000 acres); Kelleys Island, the largest U.S. island (2,888 acres); and South Bass (1,380 acres). The other U.S. islands are Middle Bass, North Bass (Isle St. George), West Sister, Rattlesnake, Sugar, Green, Ballast, Gibraltar, Mouse, and Starve; the other Canadian islands are East Sister, Middle, Middle Sister, Hen, North Harbour, Big Chicken, and Little Chicken, the latter only a few hundred feet across, depending on the level of the lake (Stuckey & Duncan, 1977). The U.S. islands are in Ottawa County, Ohio except Kelleys Island, which is part of Erie County; the Canadian islands are part of Essex County, Ontario. The Columbus Limestone, found on Middle Island, Kelleys Island and the Marblehead Peninsula, is dense and highly fossiliferous. The remaining islands and the headland known as Catawba Island are composed of impure limestone (dolomite) with numerous caves and sinkholes, but relatively few fossils. The islands bear many evidences of glaciation, the most spectacular of which are the famous "Glacial Grooves"in North Quarry on Kelleys Island. Glacial deposits are mostly thin or lacking, and areas of deep soil are highly localized (Forsyth, 1988).

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Lake Erie exerts a pronounced effect on the the climate of the islands (Verber, 1955). The frost-free season for the islands averages 205 days, the longest of any part of Ohio, although they are the most northerly part of the state; the islands have the lowest mean temperatures in January, and the highest mean temperatures for July. Although surrounded by water, the islands are drier than the mainland, with an average annual precipitation of 28 inches. Evaporation exceeds precipitation during the months of June, July, and August.

The Lake Erie Islands have been in existence as islands for a relatively short time (about 4,000 years), but they have been dry land for approximately 12,000 years (Forsyth, 1988). The Lake Erie basin was formed by glacial deepening of a preglacial river valley. Due to the thinness of the ice margin, the glacier was unable to appreciably erode the resistant limestone which forms the present islands. As the ice began to recede about 14,000 years ago, a succession of lakes occupied the basin, as much as 200 feet above the highest island elevations. About 12,000 years ago, just as the tops of the present islands were beginning to emerge, the glacier withdrew from the Niagara escarpment (which had been depressed over 120 feet by the weight of the ice) and the lake abruptly drained away to the east, leaving the islands as high, rocky bluffs surrounded by a flat, swampy lake plain. As the outlet rose, the lake slowly filled, but did not reach the shallow western end until about 4000 years ago.

Stuckey & Duncan (1977) discussed the origin of the vascular flora of the islands, and its geographical affinities. They noted the presence of distinctive western and southern elements in the flora, which together comprise about 30 percent of the 571 indigenous species, as well as a number of relict pioneer species related to the persistence of open, naturally disturbed relict habitats such as rocky or sandy shores, ponds and marshes.

Soon after settlement in the early 1800's, the forest was cut and wood was exported to the mainland for shipbuilding, cordwood and other uses. Beginning in the 1850's, extensive areas were cleared for vineyards and orchards, now mostly reverted to second-growth forest in which the dominant trees are sugar maple, hackberry, and basswood, with some oaks and hickory. Red cedar, chinquapin oak, and blue ash occur on drier, poorer sites (Hamilton & Forsyth, 1972). Stuckey & Duncan (1977) described the "woodlot flora" of the islands as unique because of the presence of trees typical of floodplains (hackberry, boxelder, cottonwood, sycamore, Kentucky coffee-tree, mulberry, and silver maple) in a situation which bears little resemblance to a floodplain. The flora has been described as an attenuated flora, composed of species which presumably migrated and became established on the rocky hilltops as the waters rose (Forsyth, 1988; Klinkenberg, 1988).

The earliest mention of a bryophyte from the Lake Erie Islands may be the report of *Seligeria pusilla* from Kelleys Island by Lesquereux & James (1884). Britton (1894) reported *Orthotrichum strangulatum* from Put-in-Bay (South Bass Island). Present knowledge of the bryoflora of the U.S. Lake Erie islands is based on the report of Schnooberger & Wynne-Hillier (1954), who collected in the islands during a two-week period in June 1945. They reported collecting 108 species, representing 50 genera and 16 families. These taxa are listed below, with updated nomenclature. They did not indicate where their specimens were deposited, however many are known to be at MICH, and in the herbarium of the Franz Theodore Stone Laboratory (FTSL) at Put-in-Bay. The list of Ohio mosses published by Giesy (1957) includes these reports from the Lake Erie islands; a few species listed by Giesy for Erie and Ottawa Counties, and not cited by Schnooberger & Wynne-Hillier, may be based on specimens from the mainland portions of these counties. These species are listed separately at the end of this paper.

Kelleys Island

Kelleys Island (Lat. 41° 36' North, Long. 82° 42' West) is roughly crescent-shaped, with a broad bay on the north side. The highest elevation is about 620 feet (the mean level of Lake Erie is about 570 feet above sea level). The island is essentially flat except for a broad valley, called Sweet Valley, which crosses the island from east to west. The interior of the island is occupied by limestone quarries (now largely abandoned) and dense secondary forest, primarily of hackberry, ash, box-elder and red cedar.

The most productive collecting sites for bryophytes on Kelleys Island are the wet cliffs and flat rocks along the shoreline, and the areas in and around the old stone quarries. Mosses common on wet cliffs along the lake shore exposed to the direct action of the waves are *Hygroamblystegium fluviatile*, *H. tenax*, and *Hyophila involuta*; somewhat higher on the rocks are *Desmatodon porteri*, *Didymodon rigidulus*, *Fissidens obtusifolius*, and *Schistidium alpicola*.

Large-scale quarrying operations on Kelleys Island began in the mid-1800's. By 1913 quarries occupied over 1000 acres, of which North Quarry was the largest (Stuckey & Duncan, 1977). East Quarry, which ceased operation in 1941, is typical of the abandoned quarries on the island. The flat quarry floor is littered with rubble and piles of broken stone. Scattered clumps of red cedar and cushions of *Tortella tortuosa* are almost the only vegetation in the drier, open areas. Where there is standing water for periods of time are willow thickets, cattails, rushes and sedges, with *Bryum pseudotriquetrum*, *Calliergonella cuspidata*, *Campylium polygamum*, *C. stellatum*, *Drepanocladus aduncus* and its var. *kneiffii*, *Fissidens adianthoides*, and *Hypnum lindbergii*. The quarry walls are screened by shrubs and small trees, beneath which are carpets of *Brachythecium rutabulum*, *Bryoandersonia illecebra*, *Orthotrichum* *anomalum*, *Plagiomnium cuspidatum*, and *Thuidium delicatulum*. On dry flatrocks along the quarry rim are *Ceratodon purpureus*, *Didymodon fallax*, *Schistidium alpicola*, *Tortella humilis*, and *Tortula ruralis*.

North Quarry, abandoned prior to 1930, is now heavily wooded except for the central, deepest portion. A moist seepage area on the vertical north face supports thick cushions of *Hymenostylium recurvirostre*, and in the willow thickets at the base of the wall are quantities of *Conocephalum conicum*, *Preissia quadrata*, and *Reboulia hemisphaerica*. The wooded areas have shaded limestone ledges with masses of *Anomodon rostratus* and *A. rugelii*, and thin, tightly appressed mats of *Homomallium adnatum* (fruiting abundantly) and *Platydictya confervoides*.

Areas of Kelleys Island which were formerly open fields or planted to vineyards and orchards have now become almost impenetrable thickets of red cedar, ash, hackberry, boxelder and dogwood, overgrown with grapevines, smilax and poison ivy. These are usually poor collecting for bryophytes, but where enough light penetrates, the soil is often covered by mosses such as *Amblystegium varium*, *Brachythecium* spp., *Fissidens taxifolius*, and *Plagiomnium cuspidatum*.

Interesting features of the bryoflora of the Erie Islands as a whole include the scarcity of corticolous bryophytes (like *Orthotrichum*), probably related to the relatively dry climate. Aquatic habitats are also scarce (there are no perennial streams on any of the islands), but wave-washed rocks along the lake shore are notable for the presence of species typical of rapidly-flowing streams and waterfalls, such as *Hygroamblystegium fluviatile*, *Hygrohypnum luridum*, *H. ochraceum*, and *Platyhypnidium riparioides*. Throughout the winter months and during ice breakup in the spring these rocks are exposed to freezing temperatures and the scouring action of the ice. Wet sedgy areas in the old limestone quarries on Kelleys Island are home for calcareous wetland species (*Calliergonella cuspidata*, *Campylium* spp., etc.) also found in the relict marl prairies near Castalia, Ohio on the mainland. *Hedwigia ciliata*, which favors acid rocks, was found growing on a large erratic boulder on South Bass Island. *Sphagnum strictum*, mentioned by Schnooberger & Wynne-Hillier as having been collected on Kelleys Island subsequent to 1945, is a curious anomaly. It is difficult to imagine a place on the island where *Sphagnum* might grow, let alone this species.

The collections reported on here were made primarily on Kelleys Island, during the summers of 1988, 1989, and 1991. Additional collections were made on Gibraltar, Kelleys Island, Middle Bass, North Bass, and South Bass Islands while teaching at the Stone Laboratory during the summer of 1992. Nomenclature in the following lists is that of Anderson et al. (1990). Specimens cited by number are deposited in KSC and FTSL.

I. Additions to the Erie Islands Flora

Atrichum altecristatum (Ren. & Card.) Smyth & Smyth -South Bass, Schnooberger & Wynne-Hillier 6244 (FTSL), reported as *A. undulatum*; Kelleys 13710
Brachythecium campestre (C.M.) Schimp. -Kelleys 13188
B. rutabulum (Hedw.) Schimp. -Kelleys 13140 13162 13211
Calliergonella cuspidata (Hedw.) Loeske -Kelleys 13135
Callicladium haldanianum (Grev.) Crum -Kelleys 11397
Cyrto-hypnum minutulum (Hedw.) Buck & Crum -Kelleys 13134
Drepanocladus aduncus var. *kneiffii* (Schimp.) Moenk. -Kelleys 13128 13138 13174 13700
Entodon seductrix (Hedw.) C.M. -Kelleys 11370 11391 13139 13205; Gibraltar 13615; South Bass 13619
Fissidens adianthoides Hedw. -Kelleys 13132 13155
Leskea gracilescens Hedw. -Kelleys 13119 13203 13209; Middle Bass 13223; Gibraltar 13616
Hypnum lindbergii Mitt. -Kelleys 13212
Orthotrichum pumilum Sw. -Kelleys 13209; South Bass 13703
O. pusillum Mitt. -South Bass, Frisoni, Manning & Weaver s.n.; Kelleys 11403
Platygyrium repens (Brid.) Schimp. -Kelleys 13176; South Bass 13239 13639; Gibraltar 13661
Thuidium delicatulum (Hedw.) Schimp. -Kelleys 13163
T. recognitum (Hedw.) Lindb. -Kelleys 13137

II. New Island Records

Anomodon attenuatus (Hedw.) Hueb. -Gibraltar 13660
A. rugelii (C.M.) Keissl. -Kelleys 13199
Bryoandersonia illecebra (Hedw.) Robins. -Kelleys 13172 13210
Campylium chrysophyllum (Brid.) J. Lange -Kelleys 13125 13141 13177
C. hispidulum (Brid.) Mitt. -Kelleys 13124
Entodon cladorrhizans (Hedw.) C.M. -Kelleys 13707
Fissidens obtusifolius Wils. -Gibraltar 13684
F. taxifolius Hedw. -Kelleys 13117 13214 13216; North Bass 13690
Hyophila involuta (Hook.) Jaeg. -Middle Bass 13227
Orthotrichum strangulatum Beauv. -Kelleys 13130
Plagiomnium rostratum (Schrad.) Kop. -South Bass 13637; Gibraltar 13671
Platydictya confervoides (Brid.) Crum -Kelleys 11409 13146 13150

III. Bryophytes Reported for the U.S. Erie Islands. The following is a list of bryophytes reported from the U.S. Lake Erie Islands, including those of the present report. The list includes 116 species and 3 varieties, representing 63 genera and 25 families. Names in parenthesis are those used by Schnooberger & Wynne-Hillier (1954). A complete checklist with the island-by-island distribution of each species is available from the author.

Mosses
Amblystegium serpens
A. varium 11402 11782 11789 13180 13689
Anomodon attenuatus 13232 13660
A. minor
A. rostratus 11392 11408 13127 13145 13233 13620 13693
A. rugelii 13199
Atrichum angustatum
A. altecristatum (*A. undulatum*)
Aulacomnium palustre
Barbula convoluta
B. unguiculata 13215 13704
Brachythecium acuminatum (*Chamberlainia*) 13222
B. calcareum (*B. flexicaule*)
B. campestre 13188
B. cyrtophyllum (*Chamberlainia*)
B. digastrum 13228
B. oxycladon 11411 13231 13241
B. plumosum
B. rivulare
B. rutabulum 11412 13140 13162 13211
B. salebrosum (*B. acutum*)
Bryhnia graminicolor
B. novae-angliae
Bryoandersonia illecebra (*Cirriphyllum boscii*) 13172 13210 13648
Bryoerythrophyllum recurvirostre (*Didymodon*)
Bryum argenteum 11399
B. caespiticium
B. capillare
B. lisae var. *cuspidatum* (*B. cuspidatum*) 13121
B. pseudotriquetrum (*B. bimum*) 13160 13171 13193 13194
Calliergonella cuspidata 13135
Callicladium haldanianum 11397
Campylium chrysophyllum 13125 13141 13177
C. hispidulum 13124
C. polygamum 13161
C. radicale
C. stellatum 13169
Ceratodon purpureus 11390 13153 13230 13659
Climacium americanum
Cyrto-hypnum minutulum 13134
Desmatodon obtusifolius
D. plinthobius
D. porteri 11406 13180 13702
Dicranella cerviculata
D. heteromalla
D. varia

Dicranum fulvum
Didymodon fallax (*Barbula*) 13126
D. rigidulus 13178
D. vinealis (*D. trifarius*)
Drepanocladus aduncus 13133 13166
D. aduncus var. *kneiffii* 13128 13138 13174
Encalypta procera (*E. streptocarpa*)
Entodon cladorrhizans
E. seductrix 11370 11391 13139 13205 13615
Eurhynchium hians 13224 13240 13180
Fissidens adianthoides 13132 13155
F. bryoides (*F. minutulus*, *F. viridulus*) 13641
F. dubius (*F. cristatus*)
F. obtusifolius 13179 13638 13684
F. osmundioides
F. taxifolius 11381 11405 13117 13214 13216 13656 13690
Funaria hygrometrica 13152
Grimmia pulvinata
Gymnostomum aeruginosum (*G. calcareum*) 13196
Hedwigia ciliata 13645
Homomallium adnatum 13129 13144 13234 13621
Hygroamblystegium fluviatile 13217
H. tenax (*H. irriguum*) 13116
Hygrohypnum eugyrium 13649
H. luridum (*H. palustre*)
Hymenostylium recurvirostre (*Gymnostomum*) 13186 13189
Hyophila involuta (*H. tortula*) 13227 13636 13672
Hypnum curvifolium
H. lindbergii 13212
Isopterygiopsis pulchella (*Plagiothecium*)
Leptobryum pyriforme 13242
Leptodictyum humile (*L. trichopodium*)
L. riparium 11405
Leskea gracilescens 11404 11407 13119 13203 13223 13616
Leskeella nervosa (*Leskea*)
Leucodon brachypus var. *andrewsianus* (*L. sciuroides*)
Orthotrichum anomalum 13208 13662
O. ohioense
O. pumilum 13209 13703
O. pusillum 11403, Frisoni et al.
O. strangulatum 13130
Oxystegus tenuirostris (*Trichostomum cylindricum*)
Phascum cuspidatum
Physcomitrium pyriforme (*P. turbinatum*) 11405
Plagiomnium cuspidatum (*Mnium*) 11368 11790 13207 13229 13240 13655 13694
P. rostratum (*Mnium*) 13637 13671
Plagiothecium cavifolium (*P. sylvaticum*)
P. denticulatum
Platydictya confervoides 13146 13150
P. subtilis (*Amblystegiella*)
Platygyrium repens 13176 13239 13639 13661
Platyhypnidium riparioides (*Eurhynchium rusciforme*)
Pohlia nutans
P. wahlenbergii
Polytrichum juniperinum
Rhizomnium punctatum (*Mnium*)
Rhodobryum ontariense (*R. roseum*)
Rhytidiadelphus triquetrus
Schistidium alpicola (*Grimmia*) 11387 11401 11783 13154 13181
S. apocarpum (*Grimmia*)
Seligeria calcarea
S. pusilla (Lesquereux & James, 1884)
Sphagnum strictum
Steerecleus serrulatus (*Eurhynchium*) 13165
Taxiphyllum deplanatum (*Plagiothecium*)
T. taxirameum (*Plagiothecium geophilum*)
Thuidium delicatulum 11395 13163
T. recognitum 13137
Tortella humilis (*T. caespitosa*) 11393 13123 13201
T. tortuosa 11400 13158 13195 13200 13696
Tortula mucronifolia
T. ruralis (*T. intermedia*) 11388 13198 13670 13697
Weissia controversa 13122 13168 13202

Hepatics
Cephalozia catenulata
Chiloscyphus pallescens
Cololejeunea biddlecomiae
Conocephalum conicum
Lophozia sp.
Marchantia polymorpha
Porella platyphylla
P. platyphylloidea
Preissia quadrata
Reboulia hemisphaerica
Riccia fluitans
Ricciocarpus natans

IV. Additional moss species cited by Giesy (1957) for Erie and Ottawa Counties, Ohio

Amblystegium juratzkanum
Ditrichum pusillum
Encalypta ciliata
Isopterygiopsis muelleriana (*Plagiothecium*)
Leucodon julaceus
Plagiomnium ciliare (*Mnium affine*)
Pylaisiella intricata ("*Pylasia*")
Seligeria campylopoda
Tetraphis pellucida
Thelia asprella
T. hirtella

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Literature Cited

Britton, E. G. 1894. Contributions to American bryology IV. *Bull. Torrey Bot. Club* 21: 1-15.

Anderson, L. E., H. A. Crum & W. R. Buck. 1990. List of the mosses of North America north of Mexico. *Bryologist* 93: 448-499.

Forsyth, J. L. 1988. The geologic setting of the Erie Islands. *in* Downhower, J.F. (ed.) *The biogeography of the island region of western Lake Erie*. Ohio State Univ. Press, Columbus.

Giesy, R. M. 1957. Studies in Ohio bryophytes. *Ohio Jour. Sci.* 57(5): 290-312.

Hamilton, E. S. & J. L. Forsyth. 1972. Forest communities of South Bass Island, Ohio. *Ohio Jour. Sci.* 72: 184-210.

Herdendorf, C. E. 1987. The ecology of the coastal marshes of western Lake Erie: a community profile. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(7.9)

Klinkenberg, B. 1988. The theory of island biogeography applied to the vascular flora of the Erie Islands. *in* Downhower, J.F. (ed.) *The biogeography of the island region of western Lake Erie*. Ohio State Univ. Press, Columbus.

Lesquereux, L. & T. P. James. 1884. *Manual of the mosses of North America*. Boston.

Schnooberger, I. & F. Wynne-Hillier 1954. Some interesting species of bryophytes from islands in Lake Erie. *Papers Michigan Acad. Sci. Arts & Letters* 39: 37-52.

Stuckey, R. L., & T. Duncan. 1977. *Flora of the Erie Islands: its origin, history, and change*. Ohio State Univ., Franz Theodore Stone Laboratory. Put-in-Bay.

Verber, J. L. 1955. The climates of South Bass Island, western Lake Erie. *Ecology* 36: 388-400.

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